

September 1997

BOARDWATCH MAGAZINE

Guide to Internet Access and the World Wide Web

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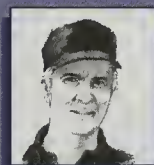


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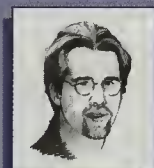
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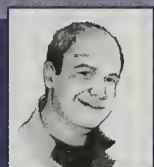
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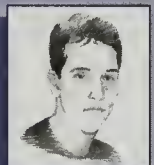
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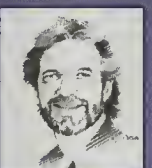
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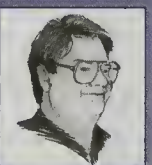
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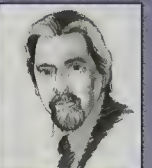
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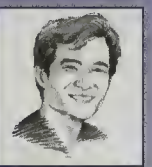
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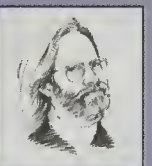
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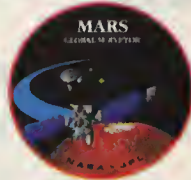
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\$5.95 U.S. and Canada

Boardwatch Magazine (Issn:1054-2760) is published monthly at an annual subscription rate of \$36. (\$99 Overseas) by Boardwatch Magazine, 8500 W. Bowles Ave., Suite 210, Littleton, CO 80123. Periodicals Postage paid at Littleton, CO and at additional mailing offices.

POSTMASTER: Send address changes to: Boardwatch Magazine, 8500 West Bowles Ave. Suite 210, Littleton, CO 80123

Printed in Canada

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EDITOR'S NOTES by Jack Rickard

WHEN PIGS FLY

"Everybody knows you can't make money offering unlimited dial-up at \$19.95 per month."

I have listened patiently to this nonsense at least three times daily for a year and a half now. I've heard it from both the brightest and the dullest minds in the Internet community. I would offer three somewhat introspective items of note and one additional thought for consideration.

1. I know more, about more different things, than anyone I've ever met. Probably more than anyone you've ever met.
2. A little over 95 percent of what I know is wrong, not a little bit in error, just 100 percent wrong.
3. I may be one of the very few in the world truly, daily, and painfully aware of number two above, and what it means.

What I would offer as food for thought is the possibility that I MIGHT not be alone. I know it sounds crazy, but just consider it.

Intuitively, we know cable TV offers connections at slightly higher than \$19.95 per month and they have to provide content and the cable itself. Telcos offer basic telephone service at something lower than \$19.95 per month, and they have to provide the copper. It is inherently absurd to then claim that ISPs can't make money at \$19.95 by basically having ever cheaper computers answer the telephone and connect people to everyone else's computers via ever more available backbone connections from ever more backbone providers. But let's look a little deeper.

It is true that we talk to a lot of Internet service providers. And it is absolutely true that all conversations with ISPs start with "I ain't makin' any money," sometimes in Yiddish. But the conversation from that point, and for the next hour and a half, revolves wholly and single-mindedly on how they can do at least three times that much bad news next year.

The reason that this might be important is that I'm hearing from a gawdawful lot of people who are devising solutions to this problem of ISPs not making any money, without really determining for certain that it is a problem. There are now hundreds of vendors who have awakened to the fact that Internet service providers have the ultimate channel distribution network. They are devising products for the ISPs to sell to those customers at a truly impressive rate. And they're a little disappointed that only a few ISPs want to do that.

So it might be worthwhile to examine, for just a moment, what's really going on here — largely because it will likely lead to some very interesting developments over the next year or year and a half. Let's take a look at EarthLink's balance sheet:

EARTHLINK NETWORK INC

Three Months Ended June 30

	1997	1996
Total Revenue	\$18,846	\$6,728
Total operating cost and expense	26,287	13,403
Loss from operations	(7,441)	(6,675)
Net loss	(7,750)	(6,835)
EBITDA (1)	(5,263)	(5,916)
Net loss per share	(0.80)	(1.04)
Weighted average shares	9,738	6,545

Six Months Ended June 30

	1997	1996
Total Revenue	\$34,564	\$10,146
Total operating cost and expense	50,042	21,609
Loss from operations	(15,478)	(11,463)
Net loss	(16,129)	(11,704)
EBITDA (1)	(11,420)	(10,254)
Net loss per share	(1.71)	(1.85)
Weighted average shares	9,421	6,338

(in thousands, except per share data and percentages)

(1) Represents earnings (loss) before depreciation and amortization, interest income and expense and income tax expense.

I like to pick on EarthLink in this instance in that their product mix is almost wholly dial-up Internet access, unsullied by such complications as dedicated access, web hosting, web design, collocation, etc. They're kind of a "pure play" on a dial-up Internet discussion and, in fact, they own very little network themselves. They buy most of it from other large vendors such as UUNET, BBN, PSInet, etc. and they are large enough to get a deal pretty close to true economic theory from these players as part of their cost structure.

But I would note that the ratios discussed here are almost universal across the industry, certainly across every publicly traded Internet access company I can find. Based on conversations with many privately owned ISPs, these ratios are almost exactly the same there as well.

Very simply, for the three months ended June 30, EarthLink's gross revenues roughly tripled from 1996 to 1997. In fact, if you take their gross revenues for the six month period ending June 30, they still roughly tripled from 1996 to 1997. If you take any quarter last year, and compare to any quarter this year, their revenues roughly tripled. And further, every ISP I look at has the same revenue trend.

They are also losing money — a significant amount of money. Their loss from operations for the three month period grew from \$6.7 million to \$7.4 million. For the six month period, losses mounted from \$11.5 million to \$15.5 million.

Test question: Now why would EarthLink, or anybody else in the ISP business, want to continue to lose money in ever greater gobs? The answer is that they have NO interest in making money whatsoever. What they want is to continue to triple gross revenues. And the loss isn't a loss at all, it's a choice to grow by 3X in 1998.

In the back of their minds, ALL ISPs are viscerally aware that they could be in the black in 15 minutes with a wave of their hand. They could simply halt the build-out to handle all the customers they are planning to get NEXT year, and take care of the customers they have right now. And nobody, repeat, I can't find a soul, is willing to even DISCUSS doing that.

ISPs want market share, and more than that, they want FUTURE market share. They will trade wife, kids, dog, and EASILY trade mere cash, especially somebody else's cash, to get it. We know with some degree of certainty that the average ISP adds 8.5 percent to their subscriber rolls each month, they lose about 2.5 percent to churn, and they net about 6 percent or better on a MONTHLY basis. That's 100 percent growth annually in the number of customers and for the inspired, the intelligent, and the swift, you don't need to be just average. The trade is cash burn for future market share.

Are they alone? Methinks not. We've watched the spring modem fashions roll out for 10 years now. In the old days, the new modems appeared at \$1,200 each and then marched steadily toward the \$50 obsolete modem point of disappearance. This year, we see a 56K battle where ISPs are given the upgrade to the new technology for free, and the modems appear to end consumers at \$200. It is US Robotics against Rockwell Semiconductor Systems in a battle for market share. The new technology is free if you'll pay shipping.

It is almost comical to watch Microsoft and Netscape battle to see who can give away free software the fastest. If you're a software developer, then it's not so funny. You can develop software, but you can't sell it, and if you develop it well, your only hope for profit is to sell the company to BillGatus of Borg. That's the business plan in software now. Make something great, give LOTS of it away, and then sell the company to Bill. If you don't have that last part in the business plan, you can't get any funding from the VC community.

So across the industry, the battle for future market share supersedes all other considerations, and certainly cash. This is certainly true of ISPs who will forever trade tripling revenues for incremental increases in cash burn.

There are two things fueling this. The never ending supply of new customers wanting to get on the Internet, feeding the revenue growth, and the never ending supply of investor funds to feed the cash burn. If either the hydrogen or the oxygen supply dries up here, this rocket sputters and dies.

The fact that an incredible array of large players (anybody who ever made a buck in any conventional telecommunications business) are wanting entrée into the game, and are willing to make splashy buyouts of BBN (GTE) or DIGEX (ICX) etc. in hundreds of millions of dollar quantities, simply pours gasoline on the flames. Your ISP business COULD win the lottery, get bought, and you can retire to the Caymans with your own black helicopter.

But viscerally, everybody knows that trees don't grow to the sky, and if you double the number of people getting on the Internet each year, sooner or later you WILL run out of people. At that point, the game of musical chairs stops and you had ought to have a chair. And that's the heart of it — the scramble for future market share before the music stops.

Now let's look at the poor hapless yuck developing the ultimate product for ISPs to sell to their customers to "make money." Since nobody wants to make money, he's stuck trying to convince the ISP that his magic slicer dicer webomatic is just what the customer wants, and the ISP can make a fortune selling it.



The problem is, right now the ISP DOES have ONE single element that he can use to control the bottom line — customer contact. If, by devising some cunning piece of software, or by buying some cunning piece of software, or by building the ultimate help-desk center, he can cut the average new customer contact time from 11 minutes on the phone to seven minutes on the phone, it is free money. So no small amount of effort goes into billing systems, customer support systems, new subscriber mail packages, etc. to MINIMIZE contact with the customer. They think about these two things night and day. How to get more customers, and how to give them better service cheaper and with less contact. And now you want me to go talk to them INTENTIONALLY to sell them your webomatic? When pigs fly....

The response usually sounds somewhat more cryptic if polite: "We want to continue to focus on our core competency. . ." This is ostensibly a reference to their ability to answer the phone and copy down credit card numbers at an impressive pace.

Interestingly, pigs will fly at some point. When the growth in new business ceases (the music stops), those with the market share do in fact win. And the game will change markedly. At that point, ISPs WILL be looking for revenue sources. They didn't really want new customers, they wanted that tripling in gross revenues. And the customers ON the Internet aren't going away. They just won't be growing in numbers. So ISPs will, at that point, actually seek products and services they can offer the market share they have to raise that \$19.95 per month to something more persuasive. And indeed, they will discover that they do, in fact, have the ultimate marketing channel distribution system after all.

My sense is this will all happen from one Friday afternoon to the following Monday mid-day. That's how these things tend to go — over the edge suddenly. The problem is, I don't know in which weekend, or even which year it will happen. But the inevitability is daunting.

EarthLink had an IPO, raised a lot of cash, and burned it all up. In any other industry, they would now fail and go away. Their 730 employees would be released to the winds and reabsorbed by others with cash yet to burn. My guess is that about, ah, oh, let's see, \$11 million dollars shows up to let 'em go another year....until pigs fly. Anybody want to take a side bet on this one?

Jack Rickard
Editor Porkus Aerialis Rotundus.



Letters to the Editor

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LETTERS TO THE EDITOR

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HOT POINTS ON THE INTERNET

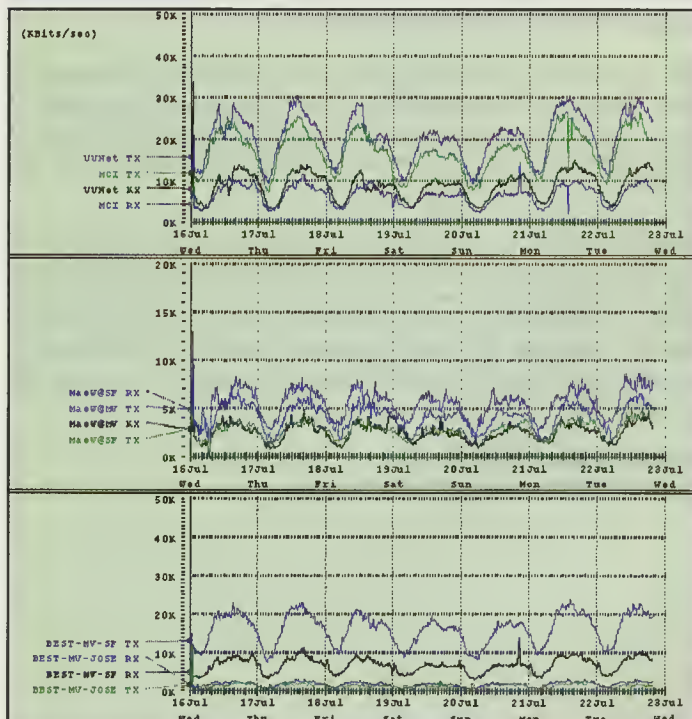
A couple of things you may want to investigate. These are just a few of the trends I've seen as an Internet user, programmer, UNIX wiz, and in my capacity as one of the founders of BEST Internet. Having written or customized just about all of the systems infrastructure, I find myself right smack-dab in the middle of the war.

p.s. oops, I've spent a few hours on this, hope you read it! I just got a *tad* carried away but your columns always generate a lot of food for thought.

p.p.s. ok, ok, so I get a little religious with Microsoft and AGIS. What can I say, I'm human! :-)

(this is personal e-mail, but please feel free to publish and/or incorporate any of this in your magazine!).

- 50% of all USENET news postings are now spam — over 250,000 articles/day. However, due to the broadcast nature of USENET news, one person's spam filter is everyone's spam filter. There are enough people generating cancels that about 95% of the spam is canceled before it gets read. All told, over 400,000 articles/day of overhead (inclusive of the cancels) is being generated.



The USENET backbone is in no danger of dying... the problem is with the leaf nodes... the newsreader machines that must index the articles rather than just pass them along. The machines that the users connect to.

Providers who configure their systems properly and put a lot of time into it can actually filter out most of the spam on the USENET.

On the other hand, providers who have not been paying attention (and that's easily 70% of them) now have smoking ruins where their news system once resided.

- The same cannot be said for e-mail. E-mail SPAM is reaching epidemic proportions, and it is increasing difficult to filter out. Some (including myself) speculate that this turn for the worse is partially due to the spammers getting kicked off the USENET. I make it a point to post to the Net with my real e-mail address. The result is the reception of a horrendous amount of unsolicited spam every day... 10 to 20 mail items. It swamps my mailbox as well as most of our users' mailboxes.... and that is WITH filtering in place. Without the filtering it would be even worse.

The filters just don't work very well. It's not as simple as detecting a mass posting to the USENET... so many people run mailing lists these days that the posting-rate filters that work on the USENET do *not* work on a mail server. You can't tell a mailing list mail from a spam!

The supposedly legitimate spammers do not hide the source of the mail because they are afraid of they'll get attacked, they hide the source of the mail to make it more difficult for the SPAM to get filtered.

In any case, this is going to come to a head pretty soon. If you want to know why so much hostility towards spammers exist, it's because they and the people who support them are completely irresponsible and play merry hell with the Internet. The spamming has pissed off just about everyone except the spammers themselves... not just the bandwidth, but the content as well. 90%+ of spam advertises either porn or something that is clearly illegal, such as a pyramid scheme. Most of the remainder is deceptive in the extreme. Those of us who recognize the deception also realize that some of our less educated users will not, and be taken in.

ISPs are starting to take drastic measures. AOL, for example, attempted to implement a degree of address verification and wound up cutting off one of the oldest mail domains on the Internet... As of this writing, BITNET e-mail addresses cannot send mail to AOL.

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Even without getting attacked over the network, AGIS has written its own death warrant. They are almost universally disrecommended and many of their IP blocks (specifically, those owned by CyberPromo and other spam-specific sites) are universally filtered. CyberPromo the institution is harmless because they are out in the open, but all the spammers who CyberPromo caters to work in the shadows... buy throwaway accounts, violate AUPs, and generally cause havoc.

- Microsoft: multi-billion dollar gorilla who wants to own.. you! Microsoft would have you believe that they invented the Internet. They are now openly attempting to destroy many of the standards that make the Internet work in order to sell proprietary solutions and 'force' people to purchase their products and only their products.

They are, unfortunately, succeeding. Not in everything... they finally appear to be giving up on IPX (probably one of the worst protocol designs I've ever seen in my life), they didn't do so well trying to usurp the PPP standard with their custom extensions. But they are making headway intercepting a great deal of the network business infrastructure... not the hard infrastructure, but the soft infrastructure. Every day they come out with microsoft-specific products that shred any preexisting standards and try to force everyone to use them. Databases, HTML browsers, remote file system access, and so on. This would not normally be a problem if not for the fact that they also create many ties (I hesitate to call it 'integration') between these products and their OS core (Windows 95/NT/whatever) that it's nearly impossible *not* to use microsoft-specific products. Worse, third party software winds up going the way of the carrier pigeon. HTML becomes WIN TML or dust. IMHO, what they are doing is seriously antitrust, but most of my contemporaries feel that the government is more interested in getting in bed with microsoft than they are prosecuting them.

Their next target: Destroy JAVA's portability to force the world to use microsoft platforms for all of their java development and execution. Sheesh.

Microsoft the software company, Microsoft the ISP, Microsoft the news service. Microsoft the... bank? These people have too much money <GRIN>. When they start building routers with proprietary microsoft routing protocols, we'll really be in trouble.

* On the great UUNET Peering debacle, I eagerly await the outcome. UUNET acting alone has had no discernable impact

as yet. The question is what will happen if other larger NSPs follow suit. As I have mentioned in prior (old) e-mail, since we purchased transit T-3s and not peering, and since we multi-home, we are unaffected as yet. However, a lot of information can be gleaned from our outgoing traffic patterns due to the multi-homing.

If anything, Alternet is catching up with MCI in terms of our outgoing bandwidth. I am seeing around 30 MBits going out our Alternet T-3 and 27 MBits going out our MCI T-3.

We keep statistics on our router bandwidth for every single interface on every single router. I have enclosed a snapshot from our report generator showing the last 7 days of activity on our transit and peering points... The Alternet (transit) T-3, the MCI (transit) T-3, and the *two* MAE-WEST (peering) T-3's (actually, one's 100MBps, the other is a T-3). I think you may be surprised, especially at the MAE-WEST traffic levels which have an aggregate transmit bandwidth of nearly 16 MBits.

Finally, I'd like to leave you with the following statement: Many ISPs like us stand both to lose *and* benefit from UUNET's peering decision. We lose because those peers now connect to the Internet in fewer places, making it less reliable. We win because many of those peers are likely to purchase T-1's from *us* rather than from UUNET. We also win because many of the wanna-be NSPs out there will almost certainly open up their peering at the MAEs to everyone at the MAEs without any major qualifications required when they lose their peering with UUNET. This means that we don't have to pay UUNET \$\$ to send and receive traffic with those wanna-be NSPs. In fact, we even win somewhat if the other large NSPs break their peering agreements and turn into private networks, because with our own generous peering policies we will wind up with much *better* connectivity to 'the Internet' than the NSPs. That in turn will make it more attractive to purchase T-1s from us then with the NSPs.

AGIS is already trying to follow in UUNET's footsteps. Ask them what their peering policy is :-). However, in AGIS's case, it's a pretty substantial nail in the coffin whereas with UUNET it's only a small nail.

I think what UUNET has forgotten is that the barrier to entry is so low, any service they discontinue will be snapped up by smaller ISPs and NSPs.

Matt

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How Hard is CIDR?

In the June 1997 publication, Thom Stark wrote a good article, "How Hard is CIDR?", in which he states:

As an example, let's take 25 hosts per network. (Doubling gives us 50. The nearest power of two is 64.

So far so good.

It takes 7 binary digits to express 64 in base 2.

Yes, but, this sizes the wrong thing. We are looking for the number of bits (presumably the minimum number, otherwise what was the point of CIDR again?) to represent 64 unique addresses NOT the number of bits to represent the number 64.

so the host portion of our solution is 7.

The number space 0 to 63 represents 64 unique addresses. This can be represented in 6 binary digits. Granted 7 binary digits will also hold the 64 addresses but, then he has more than quadrupled the future growth expectations not doubled them. This is not necessarily a bad thing but, it should be done deliberately not accidentally.

Thom does the same thing with 16 subnets. The space from 0 to 15 represents 16 unique subnets. This can be represented in 4 binary digits.

The minimum CIDR space is /22 (32 minus 22 is 10 and 2 raised to the 10th is 1024 unique addresses) for this example not /20 (32 minus 20 is 12 and 2 raised to the 12th is 4096 unique addresses).

Sizing the necessary address space in a different way, we see that: The planned for number of user addresses is 16*50, or 800. Each subnet is expected to leave 14 addresses (64-50) unused. The number of unused is 16*14, or 224. The sum of the planned for and the unused is 800+224, or 1024 not 4096.

Since the original expectations are 5 subnets with 25 users on each subnet the immediate requirement is for 125 addresses. Given that Thom's calculations result in 4096 addresses he is not doubling and doubling (400%) he is allowing for greater than 3200% future growth. Trimming back to my calculations still allows for greater than 800% growth. Of course if I were starting an ISP I'd much rather have 3200% growth than 800%.

Regards,
Paul Newhouse

Westcon Debuts "Operation Millennium" — an Aggressive Program to Arm Resellers with the Tools to Compete in the Future.

Eastchester, N.Y., June 23 — Westcon, Inc., the distributor of high-performance networking products, has implemented "Operation Millennium," an enhanced sales-support program. Its primary goal is to further support reseller efforts so that they can remain competitive in today's networking arena and into the next millennium. The program achieves this by helping resellers better serve their customers' routing and switching needs with clearly superior Bay Networks solutions.

"As Bay Networks' leading distributor, we've been saying all along that Bay routers should be considered for any high-priority application. That's especially true of mission-critical functions for ISPs and for financial or governmental institutions, where absolutely no downtime is acceptable," said John Papaioannou, Westcon's vice president for U.S. sales. "In side-by-side comparisons with Cisco routers, Bay Networks becomes the obvious choice because of its ability to create virtual

circuits, its non-proprietary architecture and compliance with industry standards."

Papaioannou further noted that an objective of Operation Millennium is to attract and support Bay Networks resellers. "We expect to add a lot of customers as more and more resellers understand Adaptive Networking, Bay's combination of access, switching, IP services and network management. That's going to be the way to deliver more services with a whole lot less complexity."

Westcon's superior reputation among resellers has been earned on the basis of its value-added services that provide end-to-end solutions, as well as pre- and post-sales support. Routers, for example, are preconfigured and tested prior to shipment.

Operation Millennium strengthens Westcon's support commitment while responding to reseller requests for highly specialized services to address the enormous connectivity impact the Internet is having on networking and corporate intranets. The program further strengthens Westcon's unique position in the marketplace with dedicated full-service support teams. It integrates its highly knowledgeable product managers with technical specialists, which will add even greater value to the full Bay Networks line.

"Our on-line reseller training creates a 'virtual classroom' environment."

— Jenny Pappas

Program components are customized to meet specific client application and budgetary needs, and include a variety of value-added services, such as specialized leasing programs, an Investment Protection Program (IPP) and Westcon's Bay Assurance Program. IPP, for example, enables the user to commit to a Bay Networks solution today and upgrade in the future without penalty by protecting purchases against changing technologies and business needs. Westcon's Bay Assurance Program provides 7X24 Technical Support and next-day product replacement directly from the manufacturer.

Operation Millennium will also extend services via the Internet, such as system configuration and training. Jenny Pappas, Westcon's director of channel development, stated, "Our on-line training is self-paced and includes a weekly, interactive one-hour conference call between resellers and the instructor, creating a virtual classroom environment. This complements our existing, interactive satellite reseller training series, 'Tech TV,' with certification courses on hubs, routers and network management."

In addition, Operation Millennium will ensure that a reseller phoning in with a question will be directed to the proper sales- and technical-support team within Westcon's Bay Networks business unit. "Apart from the benefits of having dedicated, knowledgeable specialists to work with," Papaioannou added, "when resellers call back they will not have to start from scratch with an entirely new person. This often is the experience with other distributors."

To obtain additional information, resellers can contact Westcon by telephone at (888) 612-7338, or via the Web at www.westcon.com.

WESTCON LOWERS THE PRICE OF ENTRY FOR THE NEW BREED OF RESELLER.

Introducing Westcon's Operation Millennium and the business model for year 2000.

If you think doing business in the '90s is tough, wait until you see what the next millennium has in store. No distributor is better prepared to get you there than Westcon.

And, for a limited time, you can get the best router from the #1 Bay Networks distributor — the one with the most product, availability and the finest tech support — at a very special price. This is the same Bay Networks router that Network World* said had twice the speed and compression of competitive routers.

But this deal comes with even more than a one-time, irresistible price: **FREE 7X24 technical support** and a 1-year warranty with next day replacement. And, an option to purchase a 56kbps CSU for only \$210! Only Westcon can deliver the best router on the market at a breezy price, along with the kind of complete service, training and support that will have you walking on air.

FREE
7X24 Technical Support and a
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A \$750 Value!

Bay Networks AN Router Package,
including Bay Networks' Access Suite Software,
Site Manager and cabling:

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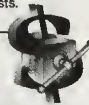
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People connect with us
WESTCON
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The source for the new breed of reseller.

Of course, you're correct. I can't account for the error, except to suppose that I overlooked one of the most basic principles in computing: zero is a number. (That's a guess, mind you, but it seems a reasonable one.)

Anyhow, good catch, Paul.

Regards,

Thom Stark

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MORE ON AN INTERESTING RBOC APPROACH

Dear Jack:

I sent you an e-mail about 3 weeks ago regarding RBOC efforts to avoid paying compensation on calls that their subscribers make to ISPs who connect to the public network through a competing phone company.

It turns out that on June 20 (about when I sent the e-mail), ALTS, the trade association of competing LECs, filed a letter with the FCC's common carrier bureau complaining about the same thing. Last week (July 2) the Bureau put the matter out for public comment, with comments due 7/17 and replies due 7/24. I think you can get the relevant document from www.fcc.gov.

ALTS's letter is fairly technical (in the legal and regulatory sense, not the hardware and software sense), and raises the matter from the perspective of competing LECs, not ISPs. Even so, dial-up ISPs might want to make their views known. Please let anyone appropriate know that this matter is pending at the FCC. They haven't formally requested comments by e-mail (as they did with the NOI on the impact of the internet on the public network), but I bet they wouldn't reject them, either.

I had an interesting conversation with some folks from the Justice Department about this issue as well. If you are interested in the issue, send me an e-mail back and I'll let you know how it went.

I hope things go well at ISPCON, for which you are no doubt deeply ensconced in planning.

Chris Savage
csavage@crblaw.com

I am ensconced to the max. But it is an interesting issue — thanks for the note. I think we will see more ISPs basically gravitating toward becoming CLECs in the future — ergo increasing interest in these types of issues.

Jack Rickard

MISSING A BASIC FAQ

Dear Mr. Rickard

I have immense respect for what *Boardwatch* and you are about. Thank you for putting *Boardwatch* online. I especially appreciate your devotion to revealing facts and truth about the Internet, ISPs, performance measurement, and the real value of services and products in measurable terms.

Suggestion #1:

I believe your website is missing an opportunity to provide some sort of answer to a question of direct interest to people who visit www.boardwatch.com:

How do the ISPs serving my area compare to each other in terms of performance? We want to pick a good ISP, or at least avoid the worst ones. You might consider answer these sorts of questions:

How "fast or slow" is their connection to the Internet? (I realize this is a complex, multifaceted set of variable, but with some averaging, generalizing and caveats there must be some relative scores you could publish.)

How busy are the local ISP modems?

I understand that you would face a number of staggering technical issues in responding to questions about comparing ISPs. Currently your directory posts Backbone, Bandwidth, and Number of Ports. But you do not prominently or directly address the question of how customers might compare ISPs. Go ahead and include all the caveats you want, or say the question is very difficult to answer. But at least raise it and respond to it somewhere on your site. Make the question and answer relatively easy to find. I think you would be responding to a question of high interest to your website visitors.

Suggestion #2:

You have a great deal of interesting things to say each month. And I understand that publication deadlines and time pressures of all sorts don't allow for a great deal of rewriting. But I can't help but have the impression that more people would read more of what you say, and pay more attention to it, if your writing were more concise. It takes more time to write a short article than a long one, and I don't want to increase your workweek. Yet I value what you have to say enough that I don't want to see your most important perspectives and opinions diluted by other verbiage. And I hope you take this in the spirit of constructive, caring feedback.

Thanks again.

Wells H. Anderson, J.D.
WA@WellsLegalTech.com
Wells Anderson Legal Tech Services

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Mr. Anderson:

Guilty on both counts I do fear. At one time I was quite concise. It was actually Mark Twain who apologized in a letter for not writing a shorter one, he hadn't the time. And we seem to be running at about 300 miles per hour around here. It was my observation many years ago that any writing could be improved by cutting 30 percent of the text without giving up on any of the meaning. But it does take time.

As to measurements, again we are paddling as fast as we can. They can be very time and resource consuming. We have inaugurated a measuring concept for national backbones, and it may consume us. It has to be continued as there are fascinating aspects to comparing results over time. This at about 30 backbones. If we attempted the same for 4,300 ISPs, it would swamp us. At the same time, it raises as many questions as it answers. Our next step WAS going to be dial-up actually. Connect speeds and availability were to be the criteria. I think we are going to back burner that for an issue or two in favor of customer satisfaction surveys of the national backbones. Our performance measurements do not account for outages, reliability, NOC support, etc., and we think the way to address these are more from the perceptions of actual customers by surveying them directly.

But once you get over the concept that "the Internet can't be measured," there are actually ENDLESS opportunities for measuring things, both usefully and to the full interest of an enormous customer base. So we should be busy for some time. I fear my writing may get even longer, and even less concise.

Jack Rickard

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X2 TECHNOLOGY

Dear Mr. Rickard,

In regards to the plethora of bad press that x2 and the other 56k technology is getting as of late, I thought I'd share my experience with it.

As a little background, I am the owner/founder of a medium sized ISP in Northern TN/Southern KY area, and had been running it out of my house for over two years. Consequently, I had a nice fast connection on my desktop to play with. Needless to say, I got rather used to this.



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I recently took a new job in another city, and left the business in the capable hands of my partners. I arrived in my new city (that being Atlanta, GA) and immediately signed up with a local ISP at 28.8k.

It was a severe shock to my system, let me tell you. How the masses could live on the measly 28.8k crumbs most people had was beyond my comprehension, spoiled as I was. I fought and fumed with the local Bellsloth about an ISDN line ... only to find out there's a per-minute surcharge in the area. That shoots my ISDN access out the window, as I'm connected 600 to 800 hours a month to my ISP. That would be a pretty penny for me, in addition to the absurd (nee, insane) prices the ISPs in Atlanta GA charge for dial up ISDN access. (Far far FAR above the national average, bordering in the stratosphere).

To my point however — After getting ulcers from the frustration of waiting on anything on the net at 28.8k, I went out and bought two brand spanking new 56k x2 USR Sportster voice modems.

I plopped both of these in my computers, one in a P166 and one in a 486. I tried to get a hold of my current ISP to switch my server to 56k (to the get the dial up port number, actually), but it being a Sat, there was no one available. Very excited, and frustrated to boot, I called up MindSpring, and asked for an account. The rep was excellent, and got me setup almost immediately for 56k. I was delighted.

The moment of truth was at hand, I hit the connect button, and listened to the funky new 56k tones. And guess what? 53.3k connection first time around. Shocked, and somewhat skeptical (As I was only getting in the low 20's on my 28.8k), I started surfing ... it knocked my socks off, for a modem. The speed was amazing, watching my CPS climb to over 5k/sec on .zip transfers via FTP.

While this wasn't quite as good as my old home, it was certainly tolerable for me, and still is to this day. However, as an interesting flip side, the second modem I bought and put into the 486, I haven't connected faster than 26k to the SAME ISP, SAME dial up ports, etc... Only thing different is the computer, modem and phone line.

Hmm, I thought ... everything being equal, I would say it's either the modem, although they are from the same batch or it's my INSIDE WIRING! My bet is on my inside wiring for THAT LINE being faulty, where as my primary data line (on the P166) has clean(er) wiring, and gets excellent connect rates. I'm going to

be moving the computer to my primary data line see what happens. I'll keep you posted if it is. Other users having difficulty with 56k may want to check their inside wiring, it could eliminate much frustration.

All in all, I would have to say 56k, comparatively speaking, is an absolute god-send, at least for me. I swear by USRs x2 and MindSpring now and will be an avid supporter in the future, unless some drastic gaff is committed by USR, which is entirely possible. :-)

Thank you,
Josh
josh@elekta.com

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Josh:

I would bet it is in the modem configuration on your Windoze computer. It's got me a couple of times already, and of course we should both know better. But I never miss an opportunity to overlook the obvious.

MindSpring is emerging as one of the most excellent dial-up providers in the world. Charles Brewer is doing some bizarre things with a business philosophy I would love to see emulated and would love to see succeed. Their commitment to customer service is a religion, and these people pray hard.

We also partnered with MindSpring on an article specifically about K56. They collected data on some 18,000 x2 calls, allowing us to draw the Bell curve on actual connection performance. Actually, it was the reported connection speed at the END of the call, which we think is more telling yet. By way of sneak preview, the average speed across 18,000 calls was 43,824 bps — a significant and welcome increase over 28.8 Kbps speeds. Unfortunately, all the K56flex hoopla has not actually amounted to anybody getting connected reliably long enough for us to stick a probe in it anyway. So the article languishes awaiting some similar data from an ISP using K56flex. (This is a thinly veiled appeal for help from our readership if you missed it.) A lot of them are ANNOUNCING it but few are actually achieving connections in any significant numbers.

Finally, I think if you would do some testing, you would find that the 56K connection is actually about the same with regards to performance as the desktop connection that spoiled you. Our test measurements of backbone/web performance indicate about a 5,000 cps or 40,000 bps rate from T-1s. That is actually within the performance parameters of these new 56 Kbps modems. At least

with regards to web performance, I'm at this point unconvinced you will PERCEIVE any significant gain by going to ISDN at all.

The reason ISPs charge a stratospheric amount for ISDN in the Atlanta area is precisely the same as the reason YOU note in getting ISDN service yourself. The product is overpriced to your home by the telco, and the ISP has to pay the same charges to the telco for THEIR end of your connection. That's why they're off the charts in comparison to the national average.

Jack Rickard

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WEBSECURE AND THE WIZARD OF OZ

Hello

I enjoyed the article on the web. Some more even technical info including some diagrammatical representations of the connecting equipment might actually help make the message somewhat more 3D. (?)

In reading the tutorial in your May/June issue, I noticed the reference to smoke and mirrors (wishful thinking and overactive imaginations) among some of the ISPs.

Possibly your research had lead you to come across the path of Websecure out of the 617 area code.

As a stock holder in this Saugus, Mass, based company which was recently delisted from the NASDAQ board I recently made "several" phone calls to find out just what service they, in fact, were ostensibly providing. After speaking with some of their customers (listed on their Web page) and their CEO and a salesperson, I was more confused than ever as to why so many people, including myself would ever buy stock in a company whose product was so vague. About all I could gather was that they had a certain amount of direct connectivity to the NAPs, which put them in a fairly strategic marketing position. (?)

They certainly are not concentrating their attention to secure commerce on the Web which is what I believed was their business. Their responses to my inquiry about which encryption engine they used was, "none yet."

Anyway, I did not find them listed as an ISP in your guide, which I believe they may not be.

Any help as to their actual business potential vis a vis this all important direct connection to several NAPs would be of great interest to me.

I have one other question in the form of a personal experience. I joined the Web only after the convenience it afforded me became absolutely necessary to me.

I signed up with AOL. Basically, I can't stand them. The disconnects and the constant busy signals are worse than ever. I tried to sign up with Prodigy, but after two attempts was told that they were having some difficulty with the registration technology somewhere. I will try again since they are offering me a "free" month.

My only tie to AOL at this time is that I use their stock report center on a daily basis. It allows me access to many services.

I am assuming that a smaller ISP will not offer me this access. Yet I am sure that many of the services that AOL offers, 99% of which I don't use, are available merely by knowing a correct site address. Is there any truth to this belief? And, how do I find these sites. My surfing has not been very successful. Is there a directory of sorts?

Anyway, any help would be appreciated.

Thank you,

Dorian Jones
scato345@aol.com

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Dorian:

AOL is itself available over the Internet. But I think you will find a rather immense amount of information available on investing on the network. There are at least 20 brokers offering portfolios, real time quotes, and online trading at this point. I probably should do an article on it. I'm playing with options using E*TRADE myself and it makes the entire city of Las Vegas look like kiddyland at McDonald's. It's legal, blatant, online gambling and I am actually enjoying it immensely. We are looking at doing a new magazine based on this. We have found some 4,400 web sites devoted to investment information.

We do publish our **Directory of Internet Service Providers**. I'm sure it will list a capable ISP in your area. And I think you will find a world of investing information and resources that makes AOL look like a good place for kids to start by comparison.

Jack Rickard

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POOR TASTE

Mr. Rickard,

Regarding your June issue cover-page representing John Sidgmore as the cul-

prit for taking down the MAE's, was a poor choice of representation for UUNET's antics. Regardless of how the public views Sidgmore's decisions, the scene portraying him as another Tim McVeigh was done in poor taste. Your timing could not have been worse which happened to be during the emotional verdict and sentencing of McVeigh. It's bad enough the people in Oklahoma (the people throughout our country for that matter) are consistently reminded of the Oklahoma City Bombing without idiots such as you trying to create a humorous spin on the horrible situation. The insert of Sidgmore on the "Fable of Contents" is an almost acceptable portrayal but your cover with the Rider Truck and Ammonium Nitrate creates a too similar scene of the OKC Bombing. In today's imperfect world, we cannot please everyone but we can at least think of those who might be hurt by our actions, especially in sensitive matters such as the horrible bombing that took place in our heartland.

Glen R. Hathaway
glenh@good.net

Glen:

Idots such as myself are simply not known for their sensitivity. I conceived the idea, loved the art, and am immensely pleased by this cover. Our own Marla Asheim did the cover, and we ran Conrad Hall's entry in the inside. I'm sorry you were offended, but as you yourself point out, there is always going to be somebody offended. I think it's one of the best covers we've done since Bill Gates of Borg. I'm sure the Borg were terribly offended even if the ever popular Mr. Gates was not.

Taste is a matter of taste, and I'll not attempt to defend mine. Suffice it to say that I doubt we've ever done an issue without offending someone. It's not something I can spend a lot of time pondering.

Jack Rickard

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ISP AND CLEC NO-BRAINERS

Dear Jack,

I enjoy your magazine a lot. I've been a patron mostly for the last couple of years — I moved about the time for renewal and missed the renewal so I just recently re-subscribed.

I'm writing because of all the craziness going on. Let's start with Bill and Keep. Don't start-ups know they can bill the ILECs in most states for calls received from the ILEC? So go form a subsidiary and file for CLEC status, all you ISPs located in states not promoting Bill and

Keep. I would file tomorrow if I were an ISP, but I'm not; I'm just a consultant going nuts over those that can't see through the fog. Let's see, currently an ISP pays about \$800 a month a T-1 for originating access, or as a CLEC, that charge goes away and is replaced with \$2,000 in revenue. Seems like a no-brainer to me!

Continuing on...What about carriers having difficulty "justifying" xDSL? Let's see, I could put in analog loops costing about \$15 - \$20 a month each (not to mention installation charges) or put in 1 or 2 analog loops plus xDSL. The crossover point is really low, like at about 5 lines. Traditional (expensive) T-Carrier makes sense at about 8 lines. And the example I like is 15 lines where I can pay about \$15 a line for analog versus less than \$10 a line a month for xDSL, including depreciation and finance charges for the equipment. Seems like a no-brainer to me!

More craziness — a network for data and a network for voice. This is really nuts! Don't they know they can get well over 8 times the number of conversations on a packet network than they can get on a circuit switched TDM/64Kbps network? Let's see, that means a DS3 in the old world will carry 672 simultaneous calls and in a packet world, 5,000 or more simultaneous calls, depending on where and how voice is digitized and "packitized". Seems like a no-brainer to me!

While I'm at it, one of the craziest things is an ISP deciding not to offer voice. Don't they know that their network model is what the telco's network will look like as soon as the telcos can justify replacing their imbedded switched circuit TDM junk? Say in 15 or 20 years or so. Don't they know the existing carrier paradigm is one to one (one line or one trunk = one call at a time), and there's a new paradigm emerging of one to many (one line or one trunk = many calls at a time)? Think about it. It's pervasive — even access fees are moving to lines, so what happens when one carrier sells lines and another carrier sells data packet transport? Let's see, existing carrier networks cannot be competitive with ATM or IP networks so do I offer voice on my packet network or not? Seems like a no-brainer to me!

I could give some pricing and cost examples, network configurations, projections of profit potential, but I think I've already excited your readers or made them crazy. If you run across an enterprising provider or two out there, or especially a naysayer, send them my way. We'll all be a lot more sane when the established carriers can no longer keep up the confusion to keep out as many players as possible.

Dv

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Match that with 48 million computers
starving for faster access to the Net, and you've got an
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It's really very simple. Just give your subscribers
a healthy helping of Rockwell K56flex technology.

And help them avoid the indigestion that
a wrong choice
inevitably brings.

Bon Appétit.



www.nb.rockwell.com/K56flex

*Actual speeds vary depending on line conditions. Due to FCC limitations, speeds in the U.S. are less than 56 Kbps.

Thanks again for the excellent magazine and for the trend setting web site.

Bill Eidt
talentlines@msn.com

Bill:

There is a cultural gulf between the people that operate Internet service providers, and the people that operate telephone companies. It is indeed awesome to watch in action and it leads to some comical situations. Currently telcos are trying to become Internet service providers, and ISPs, whether they realize it or not, are really moving toward becoming telephone companies. The irony here for me is that the ISPs have seen the telcos looming on the horizon about to take it over. Indeed, telcos will. But they will be small, entrepreneurial, and look more like ISPs than like today's dinosaur telephone companies.

I agree there is a lot of missed opportunity.

Jack Rickard

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192.168.1.XXX CONVENTION

In your June, 1997, article, SMALL OFFICE CONNECTIONS TO THE INTERNET, you talked about the "192.168.1.xxx convention".

Would it be possible to explain this in more detail in a future issue, or to give a reference to where more information can be found.

Thank you.

Dean G. Huffman
dhuffman@siumed.edu

Dean:

Not too much to explain. 192.168.1.xxx does not exist on the Internet. By convention, it is reserved to serve small networks, internally, as a pseudo Class C network. Translators are used to "spoof" the Internet into thinking it is usually a single IP address. So you can appear to the Internet as a single IP address (204.144.169.32 for example) while sharing this port with up to 255 machines that are internally 192.168.1.1 through 192.168.1.254 on the local network.

There are no regulations, and no laws about this. It is just "by convention."

Jack Rickard

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COMMENTS/WEB PAGE

Jack,

I was up in the attic recently and happened to find a box of Boardwatches from 1993-1996. It was great. I sat down for 3 hours straight and read old Direct Dial BBS reviews, advertisements for BBS software, and other columns that you no longer feature. You know, while reading your past editorial I realized your predictions, beliefs, and thoughts on the Internet and the BBS all have or are coming true. I commend you for doing a great job Jack. I do miss running a board and have always had this urge to start another PCB system up.

Currently I am designing web sites. (<http://www.cyberiasystems.com>) Speaking of designing web sites I believe yours could use a facelift. I don't mean to be critical, but your site really needs a better or more user friendly layout. I am sure others think the same thing. Your site has so much to offer. Why not make it easier to use?

I wish you the best Jack. Thanks for a great magazine.

Nathaniel Kent McMullin
Manager of Operations Cyberia Systems
"Marketing the Next Millennium"
Email: nate@cyberiasystems.com
Web: <http://www.cyberiasystems.com>

Nathaniel:

Thanks for the input. Yes, our prediction history is almost unerring. Few read us over such a span of time, so we don't actually get much credit for it. Going further back into the late '80s, the editorial on A MILLION TINY LENSES and particularly the 1988 editorial on flat rate long distance and EVERY MAN WITH A PICKUP TRUCK AND A PAIR OF PLIARS A TELCO are almost eerie to read today. There probably aren't a dozen people in the country will ever know. Our prediction of Apple's demise, nearly three years ago now, is nearly enough forgotten. We published a six page review of Mosaic in our January 94 issue when the release of Mosaic for Windows was November 30 of 93. I have never even been able to reconstruct exactly how we even got that to the printer in time for the January issue. If you read it, you will be stunned. The problem is, about half the time when we predict something, everybody decries it as lunacy. After the fact, it is viewed as "obvious" — anyone could have seen that.

We are in the midst of a huge test and measurement project, and preparing for the largest convention/trade show for Internet service providers ever held. The

web site is admittedly on its URL. We had a graphics designer move to Seattle, Kathy Meyers, who by the way designed the BillGatus of Borg cover. She started up again last week as our first truly, truly remote graphics designer. She is going to attempt to get us back up to snuff webwise as one of her first tasks from her new home in Seattle.

Jack Rickard

◆ ◆ ◆

FYI...DON'T LEAVE THE OFFICE UNTIL YOU TRY THIS...

FLASH!

Microsoft just pulled an AOL...

Dear Jack:

(I know I actually owe you two letters, but in the meantime), for about the last 40 hours the Microsoft home page has been virtually dead or down.

Wednesday morning, the home page became very slow to respond.

Yesterday morning it was even slower. By early afternoon the system was locking up or giving error messages for any page (info pages, download pages, etc., even the esoteric pages). Last night, I attempted to download I.E. 3.02 onto a new machine, I actually got the connection, but six hours into it I had only captured about 7 MB of the 10 + MB download. Sometime in the middle of the night, MS stopped sending packets and the connection was terminated.

Today, virtually no page would load, or only partially load. Since, MS has insulated themselves to e-mail no one has been able to tell them of the situation. I called the number for MSN and was told it must be my connection, I then told them to try just getting the welcome page, or any download page. Oh, well we don't run the server. Well, maybe you might want to tell the people who do, so your service can get back up. Apparently they are now working on the system.

Cause.

Previous versions of I.E. 3.x all boot to the MS home page, one version won't work unless you visit MS first. For the last week, all versions of I.E. have been getting a message pop-up box stating that you must download Authenticode 2 by June 30, or your browser will cease to function.

When I.E. 3.02 was released the upgrade from 3.0 to 3.01 was removed. Only a full download of 3.02 was available. A week later, a major patch. Two

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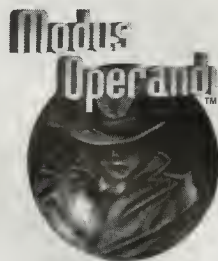
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weeks later the release of Authenticode2. Secondary problem, had you not been crafty enough to find and install the patch, the Authentic code supplement would not load into an existing 3.02 browser. Now, 3.02 is downloadable a full revamp.

Imagine.

Two million browsers all stating they will cease to function unless you download the update. Problem, depending what version of just 3.02 will dictate your ability to even get the upgrade, without taking the dreaded full download.

DO YOU THINK THEY GOT CAUGHT WITHOUT ENOUGH PIPE?

DO YOU THINK THEIR SERVERS WERE NOT UP TO THE TASK?

Hope you and the gang have fun with this one.

Remember, bigger is better...

Bryon S. Uding
bsu@megsinet.net

Bryon:

*Curiouser and curiouser. I can see the headlines now **INTERNET BROKEN** — SEE OUR SIDEBAR ON HOW YOU CAN TELL THE DIFFERENCE WHEN IT WORKS.*

Thanks for the note.

Jack Rickard

◆ ◆ ◆

TRACEROUTE

Mr. Rickard:

Impressed by Boardwatch and look at its output with some care when I do. Traceroute article is over my head but definitely gave me a (taste) of what the internet actually is. Can Traceroute tell me If the Site Host I select is merely daisy chaining from another sitehost, doing nothing itself? (is it inevitable that I will experience this?)

I contemplate using Anaserve to host some sites I will and have built (of a commercial nature). Several Anaserve hosted sites seemed fast and the company seemed reasonably professional. (I looked at them because I used Hotdogpro to cook with.) It would be good to know that they are not merely a virtual host like the service they offer to others to be virtual hosts.

Perhaps I poorly understand the system, Is it reasonable to hope for a site host

that is actually doing the majority of the work and is not merely a desk and an XT in some basement with a moonlighting rock guitarist keeping records with a box of 3x5 cards? Does it make a difference?

I suppose if it works I should not care HOW it works. Anaserve has a bushel (apparently) of sites and they seem to load fast.

How should I select a site host? (Question of the year) perhaps you have an article on the subject? in *Boardwatch*.

Sorry if I'm covering worn ground here but you seem to be the place to ask such a question, and it's become time for me to ask it.

Sincerely

Michael G. Kramer
mkramer707@worldnet.att.net

Michael:

We think it is the question of the year. And it does get a little complicated. See our July issue and July directory on Internet backbone performance. The network geography of where and with whom you host does very much matter.

Jack Rickard

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SMALL ISP AND ANALOG MODEMS

Jack,

I have an idea for a product (and have actually done much of the work) for an inexpensive box that can make banks of individual analog modems reliable for ISPs.

I read that you're of the opinion that small ISPs will survive (this is *good* news for me), and I was wondering if I could ping you on a couple other things?

1) Once the reality of x1.3 and k44flex become apparent, will ISPs still throw away all of their existing analog modems and replace them with expensive digital boxes?

2) How big of an issue is the reliability of analog external modems to the typical small ISPs? If I can keep the hunt group working (and even reset hung modems) for an ISP with 48 or so modems in a POP, is this product of significant value?

3) If I can market this box at \$40 per-port (end-user price) would a) ISPs keep their analog modem banks, b) ISPs continue to buy low-cost analog external modems?

thanks!

Jeff Enderwick
jeffncyn@internetmci.com

Jeff:

Analog modems are over. The digital 56K models are the only thing anyone will invest in for the next two years. Many ISPs will have older analog modems during that period. But they aren't going to spend anything on them.

Jack Rickard

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CLARK DEVELOPMENT COMPANY

This is a test Hey Jack,

Although most of my resources are pooled into our web site, I still manage a PCBoard system. However, lately I haven't been able to contact Clark Development Company... no answer on their main, support, or bbs. Can't find them on the web. Did they fold up? Should you have an article, "The End of BBSes"?

I'll agree that the web has taken over our lives, however there are still special niches where a bbs is better suited. Believe it or not, some of my users prefer the bbs —they tell me it's easier to connect to and quicker. Go figure

Mark Graves
mgraves@acog.com

It is Mark. And there are still a lot of them out there. As you point out, for some applications, they are quite the ticket yet. And in some third world countries, they are actually the connection to the Internet. But each season has its fashion in software, hardware, etc. The World Wide Wait is a step backwards with regards to performance, but it was a huge step forward with regards to the interface and with regards to long-distance charges. The telephone network could have easily been a much better Internet than the Internet is. The Internet exists almost solely as a response to metered long-distance charges. This is one of the reasons I smirk every time some big time executive at one of the hardware companies or national backbones patiently explains to me that flat-rate is dying and metered charges will soon be the norm on the Internet. It will never happen, and if it did happen the Internet would evaporate like smoke. It was a tradeoff in performance for flat-rate pricing. If you take away the flat-rate pricing, we want the performance back, and no one will believe they can deliver it. The interface has allowed millions more people to play without learning all the historical technical detritus of prior generations.

I don't know anything about Clark Development at this point. We don't think

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W
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BBSes ever ended, and so we never did a story on the "End of BBSes." Dial-up systems, currently equated with earlier generations of BBS technology, are still available. Most of the people who used to run such systems as a hobby now do the same thing with a web site. Most of the people who were seriously trying to operate a BBS as a business, are now ISPs and enjoying better success than ever. The line of demarcation has never been as clear to me as it has been portrayed quite widely. You get to pick from two theories. Either I don't "get it," or I'm perhaps the only one who does. The terminology changes, the people, concepts and even the technology don't very much. The online genre matures a bit more each year. We have spring modem fashions for '97, and autumn software fashions for '97, and then we'll have spring modem fashions for '98, and so on. And each year, more people, and more money, come into the genre. It's all as natural as rain to me.

Whatever happened to Bill Godbout and Clive Sinclair?

Jack Rickard

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A QUESTION

I am a subscriber to your magazine (actually I was gifted by a friend). I am not an ISP but a simple user of the internet. My ISP is IBM Global Connection. I noticed in your last issue that you gave it a glancing thought. The reason that I am with them is that they had a local phone in my area and NOBODY else did (this has since changed). I get the impression that this is not a plain ISP and was wondering just what it was.

I should also say that when you mention things about Bill Godbout it brings up thoughts. I still remember the 2200 solder joints in my first computer.

John G. White
jwhit12@ibm.net

John:

Oh, there Bill Godbout is.

I'm not sure what a "plain" ISP is John. IBM Global Network used to be a network for the PROF'S e-mail system primarily as I understand it. They did connect a lot of businesses for data. Today, they look like a national, or if you will international, backbone operator and we profile them in our **Directory of Internet Service Providers**. They have a very impressive global POP footprint, and indeed are the only available connection in some parts of the world. They claim, and I believe, that as a legacy of

their earlier dominance in corporate computing, they have some 28,000 company connections. They did not score particularly well in our latest performance tests, and they are not priced competitively as a connection for smaller Internet service providers. But they may have more "Internet" internally than there is Internet otherwise. I gather it does not harbor the more exciting corners of the Internet, but they are certainly a player. Their dial-up component was termed Advantis, and I think that has been subsumed recently.

Jack Rickard

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THE FIRST REAL USENET SPAMMER

Hi Thom,

Enjoyed your article in the July **Boardwatch**. I agree with your assessments and conclusions, but I thought you might like to know about the first Usenet spammer, a guy who preceded Cantor and Siegal. That guy was my first cousin, Ben Suarez, of Suarez Corporation Industries of North Canton, Ohio.

Several months before C&S, I had learned that SCI was planning to hit thousands of newsgroups with an ad for SCI's ill-conceived pay-e-mail proposition. At the time, I was advising SCI from a distance (Springfield, OH), and learned that his two on-site Internet guys, Bill and Kelly, had concocted a way to spam Usenet automatically. I first spoke with Bill and Kelly and told them not to do it. They seemed to want to do this purely from a technical viewpoint (I can therefore I should). I then spoke with my cousin and emphasized to him, in the strongest terms, that disaster awaited this action.

He did it, anyway, and attracted the attention of Brock Meeks. After Brock had a disastrous telephone call with one of SCI's 1-800 operators, he went into action and wrote a stinging diatribe against Ben and SCI.

Ben sued Brock, but lost. The story even made the *Wall Street Journal*. Although Brock had to pay about \$25K in legal fees, it appeared as if SCI was finished in Usenet and, generally, around the Net. Until C&S came along and diverted attention away from Ben's situation. SCI still has a Web site (www.suarez.com), but it is limited in scope and poorly maintained. Ben never asks for my advice; he knows everything...

Through all the hay in early 1994, I had to fend off lots of reflected criticism. I lost count of the times that I had to explain that I was not *that* Suarez, that

my little program "The Beginner's Guide to the Internet" was up-front, and that I never advertised it on any newsgroup.

So, Ben screwed up and that has been that for him online. Nobody knows how much money he lost in legitimate opportunities because of his obstinate insistence on doing things his way. Nobody knows how much global damage was done to our family name in that fiasco. I've been trying to right that wrong ever since.

Meanwhile, at least the spirit of the Net is not lost here. Check out my Tumor Notification Support Web site (www.bgi.com/tumor.htm), dedicated to help those who have just learned that they have a tumor. Let me know what you think.

Best wishes,

Patrick Suarez

Patrick:

You have an interesting (and sadly instructive) tale to tell I'm forwarding a copy of it to Jack Rickard and Steve Clark at **Boardwatch**.

Keep up the good work and thanks for writing!

◆ ◆ ◆

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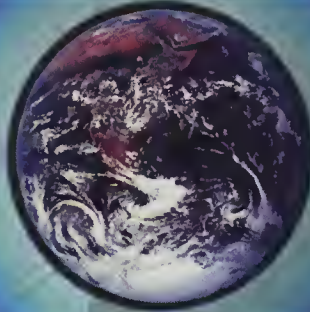


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NEW LIVINGSTON PROGRAM AIMED AT INCREASING K56FLEX CAPACITY

Livingston's K56flex-ibility program has two options that will give ISPs K56flex modems for as low as **\$249** per port. The first option is a cash rebate for ISPs who trade in their existing PortMaster servers for the new PortMaster 3. The second option is the buy two get one free program. Those who buy two PortMaster 3 servers get a third one free.

Livingston is also publishing a list of ISPs supporting K56flex. ISPs can sign up at www.livingston.com/Forms/K56flex-pop.html.

TECHNOLOGIC RELEASES FIREWALL MODULE WITH WEB-BASED MANAGEMENT

Technologic has introduced the Interceptor, a rack-mounted firewall appliance that can be managed from any remote network node. It also has a paging feature that can page a network administrator when the network is being hacked.



The Interceptor supports up to 32,256 simultaneous connections as well as virtual private network applications. It also has a graphical reporting package.

Pricing starts at **\$3,495** and the Interceptor is available for English, Chinese and Japanese customers. Technologic can be reached by phone at (800) 615-9911 or on the Web at www.tlogic.com.

THE PITCHFORK BY DANICK SYSTEMS TARGETS SMALL BUSINESSES

Focusing on the needs of small offices, which have little or no technical staff on hand, Danick Systems has released an all-in-

one box for Internet connections. The Pitchfork combines all the hardware and software necessary to connect a small, local area network to the Internet. It bridges LAN protocols (IPX, NetBios, NetBeui) with TCP/IP, thus connecting it to the Net. It supports all the popular web browsers and e-mail programs.

The Pitchfork costs **\$2,400** and comes with a 30-day money back guarantee. The price also includes free software upgrades for one year. Danick systems can be reached through the Web at www.jamaicaplain.com/dansys or by phone at (617) 524-4841.

GTE TO USE SOFTWARE.COM'S E-MAIL PACKAGE

GTE has announced that it will use Software.com's InterMail for its GTE Internet Solutions consumer ISP business. GTE serves over 160,000 customers in 50 states.

InterMail is Software.com's distributed Internet messaging system for NT and UNIX. The high-end application is designed for national and regional ISPs. The company's mid-range version, for less than 100,000 mail boxes, is called PostOffice. Evaluation versions of these, and other applications, are available at www.software.com.

NEW LINUX WEB SERVER

Hawkeye is a new integrated web, mail, news, chat and file server for Linux. It uses SQL databases to integrate all of its features and to maintain user profiles. It requires MySQL (www.tcx.se), the Linux-based SQL database. It also requires a minimum of 16 megabytes of RAM.

Hawkeye has an HTTP 1.0 server, POP3 / SMTP server, NNTP server, and a FTP server. HTTP 1.1 support will be coming soon. It also handles unlimited chat rooms. Hawkeye has an HTML interface for its configuration, so it can be managed from remote locations through the Web.

Hawkeye is free for private use. A **\$250** license fee is required for commercial use. It can be downloaded from the Hawkeye web site at www.hawkeye.net.

INTERNET BACKGROUND CHECK

Privacy Inc. has launched its Internet background check, a utility that will allow users to search Internet-based databases. It quickly moves through databases, which are published on the Web, and matches a given name (input). You can see if you're wanted, missing, in prison, a deadbeat, or a documented sexual offender in any national or state database.

Membership in Privacy Inc. is **\$29.95** per year.

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WASHINGTON
TIMES

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The Privacy Inc. web site (www.privacyinc.com) also maintains pages about other privacy issues like consumer privacy and the Freedom of Information Act. It has a legal FAQ section.

SUN ACQUIRES DIBA

Sun Microsystems bought Diba in July. Terms of the deal were not disclosed, however, all of Diba's 79 employees became part of Sun. Diba makes information appliances such as Internet television boxes.

Sun plans to use the acquisition to further the acceptance and implementation of its Java programming language. Sun Chairman and CEO Scott McNealy said, "information appliances represent an enormous opportunity for manufacturers who can deliver the right products at the right time." McNealy stated that Diba's hardware products will employ Java and Java-enabled processors.

Diba will become the Consumer Technologies Group, within Sun's Microelectronics division.

INSTANT TV BRINGS TELEVISION TO THE PC

We've been able to surf the Web on our televisions for over a year. Now, we can watch TV on our computers, thanks to InstantTV by AIMS. InstantTV is an external unit that plugs into both the video card and the monitor. Then, a cable feed connects to the InstantTV box. It can be controlled by the computer, but doesn't have to be.

It brings 181 channels and any type of video feed to the user's VGA or Super VGA monitor. InstantTV supports NTSC, PAL, laser disc, S-Video, and game systems. It carries a price tag of **\$149** and is available direct from AIMS Lab (www.aimslab.com).

SURF THE NET WITH A NET BOARD



Tired of the same old mouse pad? Try a Net Board, a surfboard-shaped mouse pad that fits on your leg. It's available in four different styles and can be ordered directly from iSi North America at (800) 211-9608. Each Net Board costs **\$9.95**.

TELECOM TERMS ON CD-ROM

A new CD is available that defines over 5,000 telecommunications terms. *Glossary of Telecommunications Terms* is published by Government Institutes (www.govinst.com). It's available for Windows, Macintosh and UNIX. A stand alone version costs **\$119** and a network version is **\$357**.

Other publications by Government Institutes include *Regulation of Wireless Communication Systems* (**\$89** ISBN 0-86587-586-3), *Telecommunications Act Handbook: A Complete Reference for Business* (**\$89** ISBN 0-86587-546-6), and *Official Telecommunications Dictionary: Legal and Regulatory Definitions* (**\$49** ISBN 0-86587-564-2).

HORMEL AND CYBER PROMOTIONS HAGGLE OVER SPAM

Cyber Promotions, distributors of unsolicited bulk e-mail, announced that it rebuffed threats in a cease and desist order from Hormel, distributors of the spiced ham product Spam. The order complained that Cyber Promotions disparaged Hormel's trademark.

The bulk e-mail company received the order after it launched the www.spamford.com web site, a spoof on the name of company president Sanford "Spamford" Wallace. Cyber Promotions' lawyer, Ralph Jacobs, said that the company's use of the word "spam" should not cause confusion among Internet users since it "refers to an e-mail practice, not a meat product." Wallace added that "it's too late to change the vocabulary of 25 million Internet users."

Cyber Promotions' web site (www.cyberpromo.com) has prominently featured its own definition of spam; in reference to adding users to bulk e-mail lists, Cyber Promotions says that spam is an acronym for "Sanford, please add me!"

HUGHES ANNOUNCES NEW PRICES FOR SATELLITE INTERNET

Hughes Network Systems, Inc. has announced three new programs for its DirecPC Turbo Internet program designed to bring high-speed connections to consumers and small businesses.

The Moon Surfer II program offers unlimited evening and weekend access at up to 200 Kbps for **\$19.95** per month. The plan charges **80 cents** per megabyte of downloaded data between 6 a.m. and 6 p.m.

The standard Moon Surfer Plan is **\$39.95** per month for access speeds as high as 400 Kbps. The same **80 cents** per megabyte rate applies for week days. Finally, the Sun Surfer Plan is also for 400 Kbps connections but it costs **\$129** per month. The Sun Surfer Plan gives unlimited access during the business day (6 a.m. to 6 p.m.) and charges only **60 cents** per megabyte of downloaded data during off-peak hours. ♦



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@wnsnews.com

TECHNOLOGY FRONT

by Jim Thompson
Western News Service

CHAMPION FAMILY OF DRIVES A REAL WINNER

A few weeks ago, I plugged in a new JTS Champion ATA-3 3 1/2 inch three gigabyte hard drive into my Pentium 166. I immediately noticed a dramatic jump in speed and performance. With data transfer rates of three gigabytes per second, this baby really screams. The drive features embedded servo, which helps eliminate data flow interruptions, making it perfect for full-screen, full-motion video applications.

According to JTS Corporation, all the drives in the JTS Champion family "offer a disk rotation speed of 5,400 RPM, 256 K cache buffer, access times below 12 msec, advanced PRML read channel and Fast ATA-3 performance allowing for transfer rates of 16.6 megabytes per second. The drives also incorporate industry-leading triple burst on-the-fly ECC (error correction code) to increase data integrity at high throughput rates and embedded servo, to eliminate the need for thermal recalibration. Embedded servo allows continuous throughput of data, making the drive ideal for MMX and multimedia applications, while the low acoustics provide whisper-quiet operation."

Champion drives also incorporate the advanced Adaptec chip set, including an integrated IDE controller and embedded DSP. The drives are encapsulated for protection from bumps and jolts and to reduce electromagnetic radiation interference. The company notes that "The MTBF is an industry-leading 500,000 hours and each drive is backed by a three year warranty."

MORDIC DRIVES FOR PORTABLES

JTS Corporation also offers a high-capacity drive for portables. The N2160-3AR, from their "Nordic" family of drives is a three inch, ultra-slim, low-profile two gigabyte hard drive. At 12 1/2 millimeters, it is one of the smallest drives available.

The mobile hard drive offers a Fast ATA-3, SMART (self monitoring analysis and reporting technology) capability and power management commands. It has an average seek time of less than 14 msec, disk rotation speed of 4,103 RPM, cache buffer size of 128 K, PRML read channel, PIO Mode 4 interface for transfer rates of up to 16.6 megabytes per second and a three-year warranty. Best of all, it's rugged. JTS Corporation says the Nordic family of drives can withstand more than 350Gs of "non-operating" shock.

"Advanced patented electronics and a unique voice coil motor manufacturing technique provide the drive

with higher performance, better noise immunity, improved heat dissipation and higher reliability than competitive alternatives.

"Embedded servo eliminates the need for thermal recalibration and provides for continuous throughput of data making the drive ideal for multimedia applications," notes JTS Corporation.

CONTACTS:

JTS Corporation
166 Baypointe Parkway
San Jose, CA 95134.
Tel: (408) 468-1800
Fax: (408) 468-1619
Web: www.jtscorp.com

Environmental Characteristics
(All Champion Products)

TEMPERATURE

Operating : 5-deg. C to 55-deg. C
Non-operating : -40-deg. C to 70-deg. C
Thermal Gradient : 20-deg. C per hour maximum
Humidity
Operating : 5% to 90% non-condensing
Non-operating : 5% to 95% non-condensing
Maximum Wet Bulb : 26-deg. C

ALTITUDE

(relative to sea level)
Operating : -200 to 10,000 feet
Non-operating : -200 to 40,000 feet

RELIABILITY AND MAINTENANCE

MTBF : 500,000 hours
Preventive Maintenance : None
Data Reliability : <1 non-recoverable error on 10-to the power of 15 bits

SHOCK AND VIBRATION

Operating Shock : 10 Gs (11 msec 1/2 sine duration)
Non-operating Shock : 100 Gs (11 msec 1/2 sine duration)
Operating Vibration : 1/4 octave/minute all axes 5-300 Hz .5 Gs
Non-operating Vibration : 5-300 Hz 2 Gs
ACOUSTIC NOISE
Acoustic Sound Pressure : 36 dBA idle mode
Warranty : 3 years

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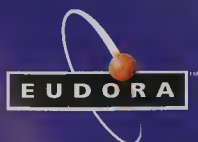
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MACINTOSH OS 8 — BUILT TO SURF

by Steve Clark

Rumors of a big announcement were buzzing in the hours before Steve Jobs made the keynote speech at the Macworld Expo. Imagine yourself as a Mac evangelist at Jobs' speech. You look up at the monitors and see Bill Gates' mug. The big announcement: the Holy Redmond Empire buys five percent of Apple for **\$150 million**, and Office 98 will be the same for Windows and Macintosh — except the Mac version might ship *first*.

Scattered boos echoed throughout the hall as Jobs said that Internet Explorer would be the default browser in upcoming editions of the Mac OS. That's no big deal since OS 8 already shipped with IE 3.01. There was scattered applause when

Jobs noted that the Netscape browser could still be used.

Two weeks prior to Macworld, Apple released OS 8. As promised, it is a major improvement over System 7.x with its emphasis on networking. In the Apple Menu, there is a "Connect To..." item that will open any URL, regardless of whether the browser is running. That, or the "Browse the Internet" icon on the Desktop will launch your preferred browser. Although OS 8 ships with version 3.01 of Internet Explorer, any version of the Netscape Navigator, including the Communicator, works fine with the new Mac operating system.

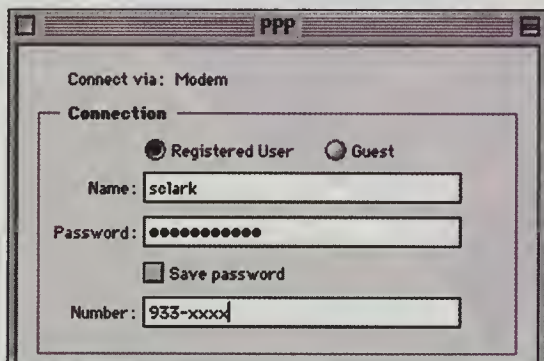
If you've been updating your extensions and control panels all along, there is little new about OS 8. The interface has the 3-D look that the Aaron extension would previously create. Window Shade is included, which collapses windows into a simple title bar with a double-click of the mouse. And the Mac OS finally has something in it so you don't have to hold your mouse button to keep menus visible. You can click once on a menu and have it displayed until you select something, or click somewhere else.

CONNECTING OS 8 TO THE INTERNET

Apple has had several different approaches to the Internet since 1995, when System 7.5 was it. Then, there was MacTCP, a shareware control panel that handled all the dial-up stuff. With different versions of System 7.5, there were all different revs of Open Transport. It was too confusing to keep track of, so Free PPP was the best way to go. With the release of System 7.6 this Spring, we saw the simple control panel called PPP.

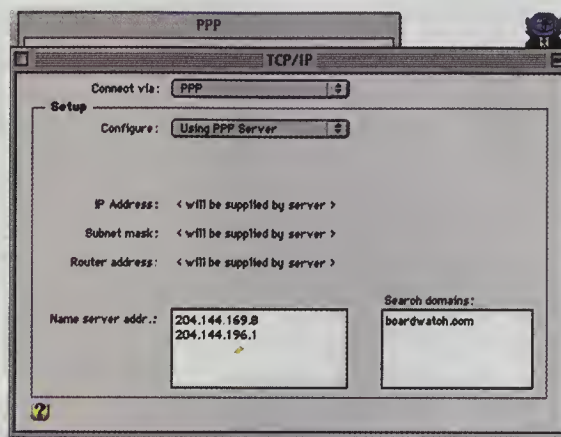
Here are the steps to configure PPP for an Internet connection:

- Select PPP from the control panels.
- Enter your user name, password and dial-up number in the appropriate boxes. You may choose to save your password.



- Select TCP/IP from the PPP menu.
- Connect via : PPP (if you're on a LAN, then select Ethernet instead of PPP).
- Configure : using PPP server.
- Enter the IP address(es) of the server to which you are connecting.
- Enter the server name to which you are connecting.

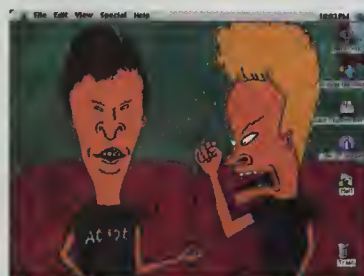
When you close PPP and TCP/IP, you will be prompted to save your settings. It's your choice, but it seems as though saving your settings would be a good idea. Like System 7.6, there is also a "Modem" control panel. You'll need to tell the system which port you're using and the type of modem connected to that port.



There aren't too many modems to choose from. For example, there is only one definition for US Robotics modems, "US Robotics Universal," but it works fine with an x2 and a Sportster 28.8.

The new Mac OS is easy to set up for Internet access. Unlike its Wintel cousins, the Mac environment doesn't force users to search for IRQs and COM ports. Years ago, Apple decided to put two serial ports on the back of its computers. One is labeled "modem" and the other "printer."

OS 8 is not the reason Apple bought NeXT for **\$430 million** last December. But it is a good stepping stone until Rhapsody arrives next year. Rumor is that Rhapsody will only run on PCI-based Macs, which means those who bought the earliest Power Macs might be stuck with OS 8 for the long haul. But, if you've got to be stuck with something, OS 8 is a great system. ♦



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THE EURO-VIEW

by Chris Lewis

This article recounts the experiences of a network manager extending a Cisco-based IP network from the U.S. to Europe. I'll cover the technical differences between how telco services are delivered in Europe as compared to the U.S., and the various strategies of the telco providers. This article covers transatlantic bandwidth options and looks at the U.K. market, the most common first destination for those expanding into Europe.

TATs, THE PTAT AND COLUMBUS

Although there is growing interest in delivering transatlantic bandwidth via satellite, particularly for Internet services (even if the return path is terrestrial), I'm going to concentrate on the terrestrial infrastructure. Terrestrial is what we have today, hybrid satellite/terrestrial is worth tracking for the future.

Transatlantic undersea cables (referred to as TATs) have been in existence since 1956 with TAT-1. TATs 1 through 5 (all of which are no longer in service, the last being TAT-5 which was retired in 1993) were owned by AT&T, and combinations of British, French, German and Spanish PTTs. TATs 6 and 7 were for scientific use and both retired in 1994. If your network plans include diverse routing, it is necessary to know the available physical paths, and to specify transport over different TATs for the multiple links bought.

The current situation is summarized below:

TAT-8

Brought into service: 1988

Owned by: AT&T, British Telecom, HTC, ITT, MCI, RCA, and Teleglobe Canada

Bandwidth capacity: 280 Mbps

Route: Tuckerton, New Jersey; Penmarch, France; and Widemouth, England

TAT-9

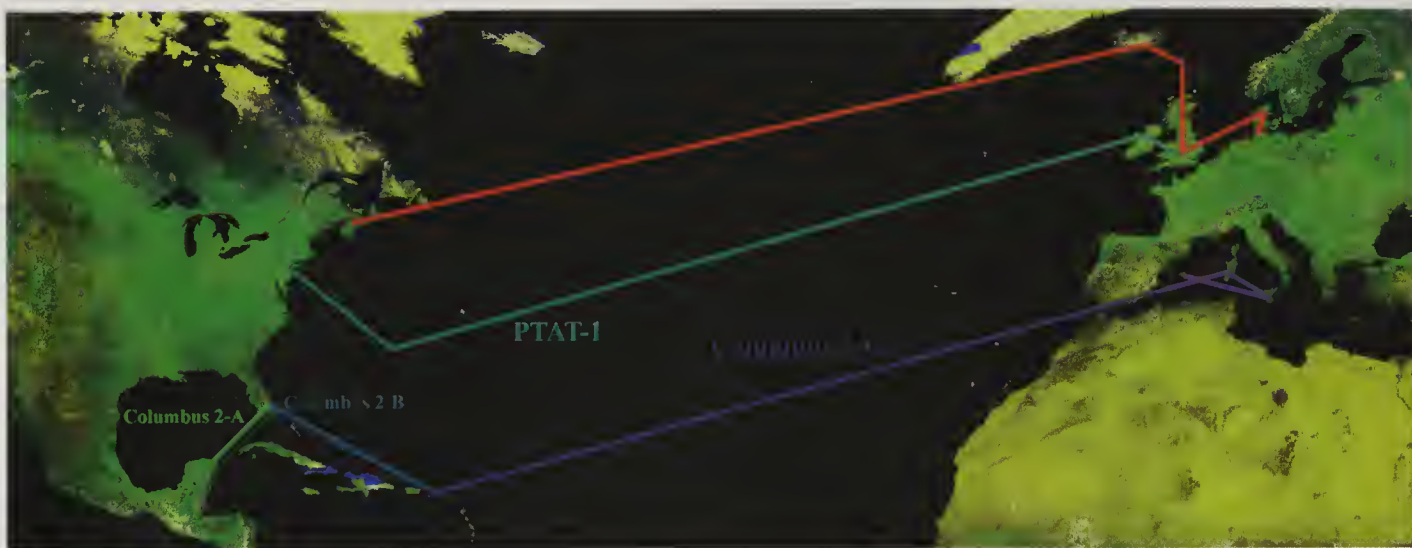
Brought into service: 1992

Owned by: AT&T, Teleglobe Canada, British Telecom, Mercury, France Telecom, and Telefonica de Espana

Bandwidth capacity: 560 Mbps

Route: Nova Scotia, Canada; Manahawkin, New Jersey; Cadiz, Spain; Goonhilly Downs, England; and St. Hilaire-de-Riez, France





TAT-10

Brought into service: 1993

Owned by: AT&T, Deutsche Telecom, and Netherlands PTT

Bandwidth capacity: 560 Mbps

Route: Green Hill, Rhode Island; Norden, Germany; and Terschelling, Netherlands

TAT-11

Brought into service: 1993

Owned by: AT&T, British Telecom, Cable & Wireless Communications, MCI, and France Telecom

Bandwidth capacity: 560 Mbps

Route: Manahawkin, New Jersey; Oxwich Bay, England; and St. Hilaire-de-Riez, France

TAT-12/13

Commissioning: began in 1996

Owned by: AT&T

Bandwidth capacity: 5 Gbps

Route: Green Hill, Rhode Island; Land's End, England; Penmarch, France; and Shirley, New York

CANTAT-3 (Canada Transatlantic 3)

Brought into service: 1994

Owned by: Teleglobe Canada

Bandwidth capacity: 2.5 Gbps

Route: Pennant Point, Nova Scotia; Vestmannaeyjar, Iceland; Tjornuvik, Faroe Islands; Redcar, England; Blaabyrg, Denmark; and Sylt, Germany

PTAT-1 (Private Transatlantic Telecommunications System 1)

Brought into service: 1989

Owned by: Cable & Wireless and Sprint

Bandwidth capacity: 420 Mbps

Route: Manasquan, New Jersey; Devonshire, Bermuda; Ballinspittle, Ireland; and Brean, England

Columbus 2-A

Brought into service: 1994

Owned by: AT&T

Bandwidth capacity: 560 Mbps

Route: West Palm Beach, Florida and Cancun, Mexico

Columbus 2-B

Brought into service: 1994

Owned by: AT&T

Bandwidth capacity: 2.5 Gbps

Route: West Palm Beach, Florida and Magen's Bay, St. Thomas

Columbus 2-C

Brought into service: 1994

Owned by: AT&T

Bandwidth capacity: 560 Mbps

Route: Magen's Bay, St. Thomas; Sardinia, Italy; Palermo, Italy; and Funchal, Portugal

For more information on undersea cables, reference www.itu.int/ti/industryoverview/cables.htm or www.teleport.com/~ptc/iscw/rmenu/atlan.htm.

If you're looking for vendors that offer bandwidth across these links, try www.spp.umich.edu/telecom/telecom-operating.html for starters. It lists many companies that will be eager to assist you.

TOWERING LONDON

Britain is the most comfortable place to start in Europe. The language is almost the same, and the circuit costs are far more reasonable than anywhere else in Europe, largely due to the deregulated nature of telecommunications there. British Telecom, the now privatized public company, formerly a government

owned monopoly, still dominates the British telco scene, but in selected areas, true competition is beginning to emerge.

This is currently a matter of great political debate in Britain. Tony Blair, the newly elected prime minister, has pledged to levy a "windfall tax" on privatized companies that enjoy a monopoly position. The windfall tax is intended to fund schemes assisting school dropouts in obtaining productive work in the community. This privatization process (the

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What the Internet experience should be.

selling off of government monopolies to the private sector) was rife under the previous Conservative administration, leading to a number of profit-motivated companies supplying utilities such as water and electricity to the general public. Most of these newly privatized utility companies are posting enormous profits that are coveted by the new government.

BT is strongly arguing that it is no longer in a monopoly position and faces stiff competition in its core businesses and therefore should not have to pay this windfall tax. It is indeed true that in selected areas of the country (such as the financial center of London) there is competition for BT. However, for most of the country there is still little choice. The arguments are sure to continue for the foreseeable future.

So, where does one start in Britain? The answer is that all roads lead to London. Like few other capital cities, London dominates everything that happens in its country. It is the center of government, finance, insurance, shipping, media, tourism and just about everything else. Fortunately, this concentration has generated a highly competitive and efficient telecommunications infrastructure, which uses very similar technology to that deployed in the United States. It's highly likely that if you have to build any networks in Britain, London will be in your plans.

American T-1 type services are delivered on the E-1 configuration in Britain. E-1 carries PRI, and clear bandwidth in 64K chunks up to 2.048 Mbps. There are only a few differences you need to be aware of between E-1 and T-1 technology if you are going to use them in a Cisco environment.

T-1s are often delivered on a RJ type connector in the U.S.. This is rare in Britain. An E-1 is usually terminated in a twin BNC connector, known as G.703 presentation. Once you get over the natural feeling of unease regarding the delivery of data over coaxial cables (I still have loathsome memories of 10base2 networks), things are really quite straightforward. In Europe, the telco always supplies at least the CSU as part of the circuit, sometimes the DSU function as well. If you're familiar with the Cisco CT1 card, you'll have interfaced that to a T-1 via a CSU device of some kind. In Britain this is not necessary. As long as you order the correct cable for your E-1 circuit (balanced or unbalanced, 75 or 120 ohm), you can connect it directly to a Cisco CE1 card and configure as normal.

In the U.S., you select the line code for the T-1 circuit as AMI for 56K and B8ZS for 64K. No such thing is necessary in Europe. The Europeans went straight in with 64K per channel, using the HDB3 encoding mechanism. As HDB3 is the only option available, it is set by default within the Cisco IOS. Similarly there is no need to select a framing method such as ESF or D4. The G.704 method (being the only one available) is assumed by the CE1 card.

As far as PRI services are concerned, the 2.048 Mbps bandwidth of an E-1 offers a maximum of 32 channels, 30 of which are B channels, with two reserved for D channel signaling, which uses the familiar Q.931 processes.

Individual BRI connections are delivered on the usual RJ connectors that interface to an ISDN terminal adapter.

Individual DS-0 circuits are presented in X.21, rather than RJ, as the CSU/DSU function is supplied by the telco as part of the circuit provision. X.21 is a 15 pin D type connector that has the same distance limitations as the more familiar V.35 standard.

The only other potential "gotcha" with Cisco in this environment is that you may not be able to use all the serial interfaces installed on a router. As E-1s are a higher bandwidth service than T-1s, the aggregate throughput of a network processor module or fast serial interface processor may be exceeded if all interfaces are connected to E-1s, meaning that you may need to leave one or two ports on a card empty. Once you have decided on your mix of E-1, ISDN and analog or even E-3 lines (similar to T-3, but with 34 Mbps bandwidth, also delivered on BNC connectors), you need to decide who you're going to use to deliver them.

In London there are a number of realistic options for the carrier of choice, however, they fall into two camps. The full service providers are BT and Mercury Communications. They will do everything down to a single analog line. The other camp is populated by those seeking the cream of the marketplace, by installing fiber rings within the most populous areas. These type of companies only install in to locations where it is worth their while to light up a connection to one of their fiber rings. COLT and WorldCom fall into this category.

COLT

COLT originated as the City Of London Telecommunications company and is not to be confused with City On Line Trading, the computer services bureau with the same acronym. COLT has the advantage of being owned by people with deep pockets, most notably Fidelity, and have the business strategy of being the best local-loop provider in the markets

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The screenshot shows a Netscape browser window displaying the COLT website. The page has a navigation menu on the left with links like Overview, UK Background, People, Customers, and Products. The main content area is titled 'Overview' and contains text about the UK being one of the most deregulated telecommunications markets in the world. It mentions the privatization of British Telecom (BT) in 1984 and the granting of PTO licenses to Mercury Communications and other operators. It also notes that COLT was one of the first to receive one of these licenses and is now one of the largest commercial and financial markets in Europe. The footer includes contact information for Germany, Russia, and the UK.

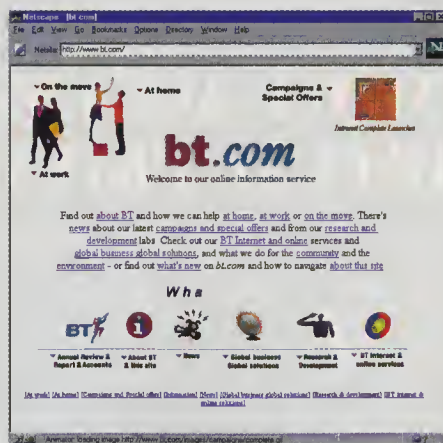
in which they choose to do business. COLT operates multiple optical fiber rings around the main business areas of London and are the most keen to add new buildings to their network, even if it will take a number of years to recoup the up-front installation costs. COLT are also building local-loop provision in key European centers like Paris and Frankfurt.

If you need to deliver bulk communications to clients within London, it is difficult to beat COLT at the moment on price or service. However, don't expect much from them if you need to get a single ISDN line in a location. For more information, reference www.colt-telecom.com/english/countries/uk/fr_uk.html.

WORLDCOM

Now a significant player in both the international and local-loop markets, WorldCom has a lot of infrastructure to offer. The local-loop provision of WorldCom used to be MFS. WorldCom is more circumspect regarding the addition of buildings to their fiber rings than COLT. WorldCom will want to see that they are going to be making money on an installation in a shorter time span than their rival. It is unclear who's strategy is the best at the moment, however, I suspect the vendor that has the most coverage will win out in the long term.

For more information try www.wcom.com or www.mfst.com/mfs-international.



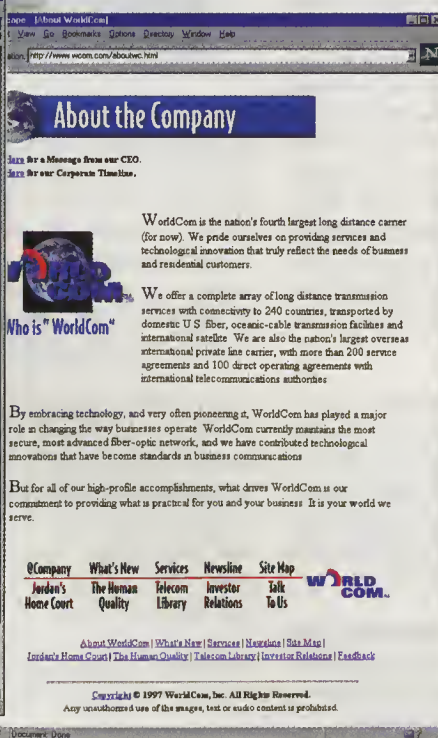
BRITISH TELECOM

The AT&T of Britain is a massive organization, with plenty of resources, as evidenced by its recent bid for MCI. BT can offer a plethora of services aimed at almost every segment of the marketplace. However, as with all companies of this size, they lose something in the agility and flexibility departments. If you want to outsource your British network headaches, BT will do a good job, but at a high price. BT's standard offerings include managed bandwidth, systems integration, outsourcing, and support services. Further information is at www.bt.com.

MERCURY

Mercury, the other full service provider, is in a rebuilding phase in terms of their reputation in Britain. Mercury was brought in to break the BT monopoly in 1984 and made a promising start, however in latter years were not as effective at taking business from BT. This ineffectiveness led to their parent, Cable & Wireless forming a new company called Mercury Communications Limited, NYNEX CableComms Group PLC, Bell Cablemedia plc and Videotron Holdings Plc. This move along with the appointment of a new CEO from outside the group, has generated more confidence in the long term viability of Mercury as a provider. Essentially, Mercury is between BT and the smaller providers in terms of coverage and cost.

So there you have it, the physical transatlantic paths to diversely route over, the differences in configuring Ciscos for European E-1 compared to T-1 services, and a quick tour of the main telcos you may want to buy bandwidth from. ♦



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REMOTE ACCESS SERVERS AND VIRTUAL PRIVATE NETWORKS

Putting Excess Capacity to Good Use

by Steve Clark

Internet service is a can of worms. ISPs set up shop to provide connections to an infinite data cloud called the Internet. Now that technology and methodology are fairly established, ambitious ISPs are searching for ways to differentiate themselves — offering services that go above and beyond the call of duty. The possibilities are endless. Whatever it is that ISPs plan to specialize in, they need to invest in equipment that will allow them to expand their range of services.

Internet providers need to be able to move fast to implement new technology and strategies. Price and scalability are both very important issues, and ISPs need to know that they will be getting bang from the bucks that they invest today.

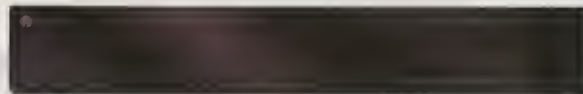
REMOTE ACCESS SERVERS

A remote access server (RAS), in its simplest form, is a device that connects dial-up clients to a network. In the BBS days, a RAS only needed to be simple enough to do just that. These rack-mounted boxes usually contain a modem bank on one end and a connection to a network on the other. The role of the remote access server is becoming more important as Internet services and telecommuting increase. But as telecommunication services become more and more complex, so too do the features of the remote access servers. There are many ways to connect to a network from a remote location: 14.4 Kbps modem, 28.8 Kbps modem, three flavors of 56 Kbps modem, 64 Kbps ISDN, 128 Kbps ISDN, Frame Relay, and a half dozen speeds in the DS-0 range. Most ISPs have an unhealthy mix of all the above connections, which require different types of circuits from the telco as well.

The RAS must also connect to some type of network on the other end — the network that the dial-up users want to access. For the ISP or the corporation, these networks are the Internet or the corporate LAN respectively. Some applications might call for incoming calls to be routed to several networks. As the interaction between private LAN and the Internet increases, the RAS must do more, including security, authentication, and routing.

The near-perfect remote access server would be scaleable, with generic incoming connections, routing capabilities, and smart Ethernet or Fast Ethernet connections to the network. Recently, several high-end remote access servers have been released.

BAY NETWORKS 8000



Bay Networks' 8000 model is designed to address the differences between IPX-based local area networks (LANs) and the IP-based Internet. Many LANs still do not use IP as the default protocol. The company designed the 8000 to be "future proof," meaning that regardless of new technology, it can be upgraded. It uses Bay's proprietary BayDSP digital signal processor (DSP) chips for its components, which can be upgraded to run xDSL and wireless applications.

Each 8000 supports two interface cards — T-1, E-1 or PRI — giving it a maximum port density of 48 modems for T-1 interfaces, 62 modems for E-1, or 60 ISDN B channels. The 8000 is a compact remote access concentrator that takes up only 2.6 inches of rack space. As more capacity is needed, new 8000s can be stacked on top of each other. However, ISPs needing more than seven 8000s (336 ports) should consider upgrading to Bay's 5000 MSX remote access server.

This unit is the only RAS that openly supports x2 and K56flex. It also uses Mobile IP, a Layer 3 tunneling protocol.

MICROCOM ACCESS INTEGRATOR

Microcom's Access Integrator is a full blown ISP in a seven- or 17-space, rack-mounted box that handles incoming connections through a T-1 or PRI interface. This enables the ISP to buy one high-capacity connection to the central office that will handle all incoming traffic, regardless of whether it's ISDN, analog modem, or DS-0.

Prior to releasing the Access Integrator, Microcom's flagship product was the ISPorte, a dial-up server used by bulletin board operators and Internet service providers. Microcom, which was recently purchased by personal computer maker Compaq, has focused its efforts on developing and selling this all-in-one remote access server.

The Access Integrator is Microcom's first product to include its patent-pending ADAPTive Switching. (No, that's not a typo, it's an acronym for Advanced Dynamic Access Partitioning Technology.) It works by dynamically switching incoming calls to their appropriate destination. It allows ISPs to set up several different telephone numbers for different services.

The T-1 or PRI interface detects each new connection. If the new connection is a modem call, then it is switched over to the modem bank. It is then sent to the built-in router, which directs the call's packets to the Internet or local area network.

Calls are handled based on the telephone number dialed, the dial-up protocol used, or the user's name. PPP users can be sent to different networks based on their user names. PPTP users must dial a different phone numbers to reach a different LAN. At the administrator level, the simplest method is to assign different phone numbers for each network or service.

Also, ISPs can route calls based on the customer's premium services. Customers paying for 56 Kbps modem service can be routed to the Access Integrator's 56K modem card. The Access Integrator uses Rockwell's K56plus chips for its 56K analog modem cards.

The Access Integrator is one of the only servers of its kind to inherently support both the L2F and PPTP protocols. Most other remote access servers support one or the other. ISPs need to buy peripheral devices to support both protocols with other servers. The Access Integrator uses L2F, or Layer 2 Forwarding, for its PPP connections. Authentication at the remote access server level, which protects the LAN better. With this protocol, tunneling is based on user name.

The Access Integrator uses Point to Point Tunneling protocol (PPTP) for its virtual private networking. With this protocol, tunneling is based on called address (i.e. the dial-up telephone number) and authentication occurs at the LAN where the user is connecting.

OSICOM IQX-200

Osicom is not exactly a household name in the remote access server world. The company has been paying its bills by developing and licensing technology for telecommunication products and network print servers. The company's new IQX-200 is a smart entry into the market. Osicom has enjoyed success with its RouterMate, a great little \$1,500 box with a built-in CSU and router, on par with the Cisco 2500 series.

The IQX-200 base model ships with either a 10/100 Fast Ethernet, FDDI or CDDI interface. It can accommodate as many as seven T-1 cards, which handle 24 modem calls each. A flash upgrade can turn a T-1 card into a PRI card. Each Osicom card has its own processor which takes processing away from the IQX-200's on-board Pentium processor. All cards are PCI-based.



It supports IP, IPX and PPP. Connections are routed using the company's proprietary SmartRoute technology. The IQX-200 also supports two LAN connections, separating the private network from the public.

US ROBOTICS HIPER ACCESS SYSTEM

The Total Control series is not new, but USR has introduced some new cards that make it incredibly scaleable. The 3Com subsidiary has introduced HiPer DSP, a series of DSP-based modules that terminate modem, ISDN, and even voice calls all on the same card. Each card has a T-1 interface and 12 DSP chips that can handle up to 24 calls. A full-blown Total Control system can handle 336 ports in nine inches of rack space.

The new DSP-based cards are great because they allow for flash upgrades whenever there are technology advances. Because USR wouldn't have it any other way, the Total Control only supports x2. That shouldn't be an issue when an analog 56K standard is announced. That standard will also be available in the form of a flash upgrade.



VIRTUAL PRIVATE NETWORKING

A virtual private network (VPN), in most cases, is considerably less expensive than a direct dial-up connection. A VPN is closely related to an intranet. With all the buzzwords in this industry, it's hard to tell what's what. For this example, we're talking about it as a remote access facility for telecommuting. There is nothing virtual about one of these private networks. The corporate LAN is connected to the ISP's remote access server, which is connected to the Internet. However, the corporate LAN does not necessarily have a direct connection to the Net. Telecommuting is for users who are outside of the system and need to get in. ISPs can resell their excess capacity to corporations for remote access.

IT managers who need to allow remote access to their systems should consider outsourcing dial-up service to ISPs. Why? ISPs have experience with dial-up. Also, small businesses have to worry about expanding. At what point do they replace the dedicated PC — with three modems hanging off of it — with a remote access server? ISPs already have the dial-up ports and the lines.

DIAL-UP FOR SALE

There are two numbers to note for the following example. First, Microcom estimates that dial-up connections to a typical ISP can be as low as 30 percent capacity during the business day. Second, US Robotics estimates that dial-up outsourcing will increase by 500 percent in the next two to three years.

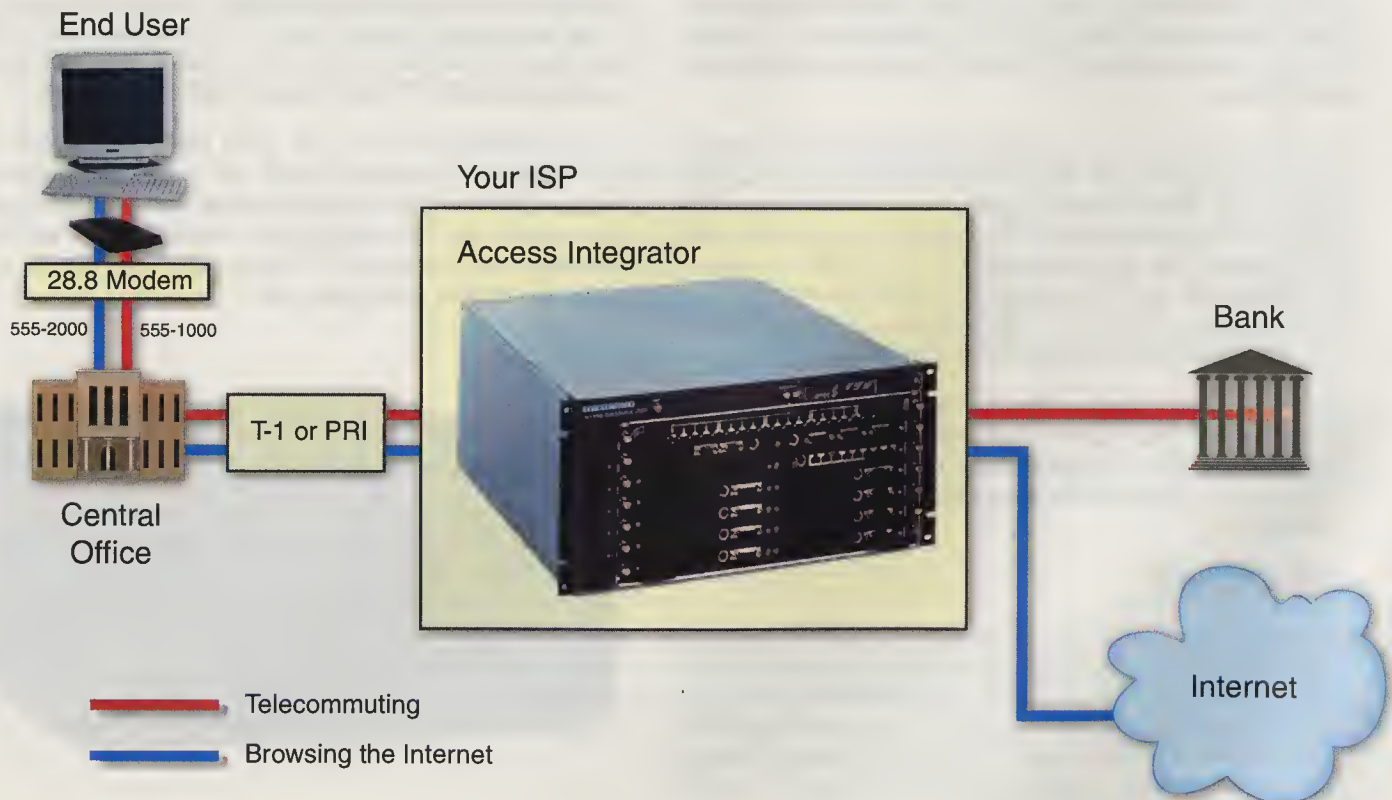
For purposes of illustration, we'll use Microcom's Access Integrator for the following example. Because the Access Integrator supports PPTP, it can be used for telecommuting. Servers that support PPTP include Novell's IntraNetwork and, of course, Windows NT.

For example, let's say there is a telecommuter who also has an account with Your ISP. He works for the bank and needs to dial-up to the bank's LAN to get some files. The bank also has an arrangement through Your ISP to provide dial-up WAN service. It leases a 56 Kbps connection which is terminated at Your ISP's Access Integrator. When he dials 555-1000, his connection is routed through the Access Integrator, to the bank's local area network. He becomes a telecommuter.

Afterward, the same person dials into Your ISP to surf the Web. He dials 555-2000 and is connected. He has no idea that he's connecting to the exact same box he used to access his company's LAN. But that's exactly what happens.

Your ISP is able to use the full capacity of its PRI line. First, it offers dial-up WAN service for the bank, and several other local businesses. The bank benefits because, by leasing a 56K connection to Your ISP, it doesn't have to support its dial-up telecommuters. Furthermore, as more people begin to telecommute, the bank doesn't need to get more modems to accommodate them. It can use its 56K connection to Your ISP for all remote employees. No longer is it one user, one modem, one line; the bank can cram as many users as can fit on its 56K connection to Your ISP. If that line gets too clogged, then the bank can get an ISDN, xDSL, or even a T-1 connection to Your ISP. Still, all the bank's remote employees can dial 555-1000 to connect. Your ISP's dial-up lines are typically busy at night, and not so busy during the day.

Telecommuting has one caveat: don't try running applications off the LAN. The telecommuter must have the applications installed locally on the home computer. You can run most applications over a 10 Mbps Ethernet with little problem, but most apps will simply die over any dial-up connection.



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<http://www.control.com/us/bwm>
E-mail: info@control.com

COMMON GROUND

All of these remote access products feature hot-swappable cards and RADIUS support. An industry standard, Layer 2 Tunneling Protocol (L2TP), may soon emerge that, as the name suggests, will combine the best of L2F and PPTP. Both Bay and Microcom will be supporting the L2TP protocol when it is ready.

For the long haul, this DSP technology is really a good thing. It allows ISPs to easily upgrade to new standards and new technologies as they become available. The DSP chip trend is one that other types of hardware vendors should note. Wouldn't it be nice if you could double the capacity of your hard drive just by popping in a floppy?

Bay, Microcom, Osicom and USR all offer great products in this area. But no matter how technically good these things are, positioning will always win. USR's x2 may not have been the best technology for analog 56K, but the company is dominant at retail and in the mail order houses, ISPs use enough USR equipment to have an impact, and x2 hit the streets first.

A remote access server is perhaps the largest capital investment any ISP will make. It's not as disposable as a **\$3,000** web server. Bay Networks offers a lease program that makes its 8000 RAS an attractive choice. Bay's lease program extends to its other remote access products. For **\$15** per port per month, ISPs can lease a Bay RAS. The company offers three levels of technical support, the highest level includes 24X7 phone support, next-day part replacement, and labor for an additional **\$4** per port per month. So, for **\$19** per port per month, an ISP can have a fully supported Bay remote access system. Consider that most ISPs have 10 subscribers (paying **\$19.95** per month) for each port, this program is a recipe for success and scalability.

Bay is not the only company with a leasing program. Livingston has a generous program for its remote access products, and other vendors have begun to set up leasing and financing services. However, only Bay had a definitive leasing program in place for this story. A leasing program turns a RAS into a monthly expenditure rather than a capital expense, which makes price per port less important. ♦

Bay Networks 8000 Remote Access Concentrator

www.baynetworks.com

Price: **\$19,995** for the base model with 2 PRI/T-1 interfaces and 48 modems
Ships: October 1997
Supports x2 and K56flex
DSP based

Microcom Access Integrator

www.microcom.com

Prices: Access Integrator 700 (7-slot chassis) **\$3,995**
Access Integrator 1700 (17-slot chassis) **\$6,995**

Microcom makes the following modules, which range in price from **\$1,995** to **\$3,225**, for the Access Integrator. Some third-party cards are available:

Dual T-1 Module
Dual T-1 and MNC Combination Module
Dual PRI/T-1 Module
Dual PRI/T-1 and MNC Combination Module
Dual PRI/E-1 Module
Dual PRI/E-1 and MNC Combination Module
Managed 12 Port Analog Modem Module
Managed 12 Port Digital Modem Module
Managed 12 Port International Digital Modem Module
Modem Network Controller Module (MNC)
Comm Server/Terminal Server Modules
20-Port 10BASE-T Ethernet Module
4-Port 10BASE-T EtherFlex Module
Chassis Controller Module

12 modem ports per 28.8 Kbps module
24 modem ports per 56 Kbps module (Rockwell)
Modem calls over T-1 or PRI
Cisco 2511 router built-in on a card
Dual-port PRI
ADAPTive switching

Osicom IQX-200

www.osicom.com

Price: **\$3,050** for base unit which includes a 10/100 Ethernet, FDDI, or CDDI card.
T-1 card with built-in CSU/DSU — **\$2,185**
8-modem daughter card for T-1 card — **\$3,350**
16-modem daughter card — **\$5,535**
T-1 card with 24 modems, fully configured — **\$10,000**

BRI card — **\$2,680**
8-digital modem daughter card — **\$ 3,380**
BRI card with 8 digital modems — **\$5,300**

US Robotics HiPer Access Module Card

www.usr.com

Price: **\$11,500**
Each card has a T-1 interface and twelve DSP chips that can handle up to 24 calls.



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ISP\$ MARKET REPORT

Paul Stapleton

TIME TO CHANGE THE INDEX: DROP TWO, ADD THREE

After bouncing back and forth between finance, publishing and the Internet, Paul Stapleton has landed squarely in the middle. He is Managing Director of Stapleton & Associates, an Internet focused financial consulting firm. Clients include major players as well as start ups and middle market companies in media, telecom and software.

Paul Stapleton is also editor of *ISP Report* (to subscribe, e-mail ispreport@mediabiz.com or call 303-271-9960 or fax 303-271-9965; annual rate is \$195; sample issue sent on request) the newsletter of record for financial activity in the ISP industry. Paul welcomes comments and suggestions at paulstapes@aol.com. He lives in Boulder, CO with his lovely new bride.

Six months ago, we began publishing the I\$P Report Index. Since its inception, the index has risen 38 percent and now has a market cap approaching \$12 billion. By comparison, the Dow Jones Industrial Average has risen approximately 10 percent. All the original domestic stocks have risen from a high of 66 percent for America Online (NYSE: AOL) to a moderate six percent for PSINet, Inc. (NASDAQ: PSIX). Some of this increase can be attributed to takeover speculation (see below), but the fundamentals are also better than ever. Earnings (as a percentage of revenue and in absolute dollars) have improved, and hyper revenue growth (over 40 percent per year) continues. The industry is firming up. Only our two international ISPs, OzEmail (NASDAQ: OZEMY) and iSTAR internet (Toronto: WWW) have not seen any appreciation. Actually, they have dropped 22 percent and 25 percent respectively. However, their financial operating performance has improved, and they may be due for price adjustments.

It is now time to change the index. A couple of IPOs, a couple of acquisitions, and a strategic repositioning by an existing company have created a new landscape of publicly traded ISPs. The attached chart calculates a new average price and a new market capitalization for the new index. I will not be adding an index divisor (that has to be carried forward indefinitely) to adjust for the new index. The old one finished at **\$16.18** and the new one starts at **\$14.74**. This is less than a 10 percent difference and a small enough delta for my tastes. Let's keep the math simple, I say. I am also not weighing the index to reflect the market size of various companies. If I did, AOL would be the index. We would actually gather less information about the overall state of the industry. Instead, we use the same method as that used in calculating the Dow Jones Industrial Average. The Dow is built to give each stock a weight proportional to its price. It remains widely used as a reasonable indicator of general market movements.

We are removing two companies due to acquisition. BBN Corp. was acquired June 19, 1997 by GTE (NYSE: GTE) for **\$29.00** per share. DIGEX, Inc. was acquired by Intermedia Communications (NASDAQ: ICIX) in July for **\$13.00** per share. Since BBN will be such a small percentage of GTE's business (less than one percent), they will not be in the index. DIGEX is a much bigger piece of Intermedia's business (currently about 15 percent of the combined entity's revenue). We may put the new Intermedia into the index if the Internet access part of the business grows to over 20 percent of the business.

We are also adding three companies for a new total of lucky number 13: Metricom (NASDAQ: MCOM), @Home (NASDAQ: ATHM), and Concentric Network Corporation (NASDAQ: CNCX). @Home went public to much fanfare. Concentric was finally placed at the end of July. And we are adding Metricom because I believe their future lies in their Ricochet division, which currently provides wireless Internet access to 15,000 subscribers. Each is briefly profiled below.

Most of the stocks in the I\$P Index have small market capitalization. Of the two with some size, one is valued purely on future potential rather than historical performance. Expect continued volatility, but I think the industry is just beginning to hit its stride.

Metricom Inc.

980 University Ave.
Los Gatos, CA 95030
(408)399-8200
<http://www.metricom.com>

Founded: 1985
CEO: Robert Dilworth
CFO: Vanessa Wittman

Through its Ricochet Products and Services division, Metricom Inc. provides wireless Internet access to 15,000 subscribers primarily in the San Francisco Bay Area, Seattle, and Washington, DC, and on several university campuses and airports throughout the United States

The Ricochet service transmits at 28.8 Kbps and costs **\$30 to \$40** per month. This is much cheaper than other portable wireless alternatives and in line with wireline Internet access pricing.

Metricom's Industrial Communications division provides private network and communications services to the electric, gas, oil, and water industries.

Metricom's challenge will be to find the financing and craft the alliances needed to deploy its Ricochet network nationwide.

Concentric Network Corporation

10590 N. Tantau Ave.
Cupertino, CA 95014
(408)342-2800
<http://www.concentric.net>

CEO: Henry R. Nothhaft
CFO: Michael F. Anthofer

Concentric went public August 1, 1997 by offering 4.3 million of its 13.5 million shares to the public at **\$12** per share. Approximate sales near **\$15 million** give

INTERNET STOCK PERFORMANCE/MARKET CAPITALIZATION

Symbol	Exchange	Company	Price 3/12/97	Price 8/4/97	Percent Change	Shares (millions)	Market Capitalization 3/12/97	Market Capitalization 8/4/97
ATHM	NASD	@Home	NA	\$19.63	NA	117.52	NA	\$2,306.35
AOL	NYSE	America Online Inc.	\$44.25	\$73.63	66%	95.86	\$4,241.72	\$7,057.55
BBN	NYSE	BBN Corporation	\$20.13	\$29.00	44%	21.20	\$422.89	\$614.80
CSRV	NASD	CompuServe Corp.	\$10.13	\$11.38	12%	92.60	\$938.04	\$1,053.33
CNCX	NASD	Concentric Network	NA	\$14.38	NA	13.51	NA	\$194.20
DIGX	NASD	DIGEX	\$10.63	\$13.00	22%	11.30	\$119.90	\$146.90
ELNK	NASD	Earthlink Network, Inc.	\$10.69	\$11.38	6%	9.68	\$103.44	\$110.06
IDTC	NASD	IDT Corporation	\$6.00	\$8.25	38%	9.89	\$59.34	\$81.59
WWW	TSE	iSTAR internet inc.	\$3.05	\$2.30	-25%	24.43	\$74.51	\$56.19
MCOM	OTC	Metricom Inc.	NA	\$5.50	NA	13.61	NA	\$74.84
MSPG	NASD	MindSpring	\$8.25	\$13.38	62%	7.48	\$61.69	\$100.00
NETC	NASD	NETCOM	\$9.23	\$14.63	58%	11.68	\$107.83	\$170.86
OZEMY	NASD	OzEmail Ltd.	\$8.50	\$6.63	-22%	10.20	\$86.70	\$67.58
PSIX	NASD	PSINet Inc.	\$7.13	\$8.14	14%	40.27	\$287.15	\$327.83
RMII	NASD	Rocky Mountain Internet	\$2.25	\$2.44	8%	4.65	\$10.46	\$11.33
Old ISP Report index			\$11.69	\$16.18	38%		\$6,513.66	\$9,798.02
New ISP Report index			\$14.74				\$11,611.71	

The new index excludes BBN Corp. and DIGEX

them a market cap of over **\$150 million** (more than 10 times sales). Concentric provides virtual private networks (VPNs) and web hosting services. WebTV accounts for 29 percent of its revenues. The company also offers dial-up access directly and for resale with POPs in over 170 cities.

Concentric needs to convince investors that it's not just another plain vanilla ISP. While a partnership with WebTV represents a real revenue growth opportunity, few ISPs have been posting market caps 10 times their sales, no matter who their customers are. However, Williams Communications Group and Bay Networks' private placement investment alongside the IPO may be just the right steps needed to guarantee future TCP/IP traffic.

@Home
425 Broadway St.
Redwood City, CA 94063
(415) 569-5000
<http://www.home.net>
CEO: Thomas A. Jermoluk
CFO: Kenneth A. Goldman

@Home went public on July 11, 1997 selling 9 million shares to the public for **\$10.50** per share. With a total of 117.5 million shares outstanding, it becomes the company with the second largest market capitalization in our index.

@Home provides Internet and other online services to consumers and businesses over cable TV. TCI maintains a controlling position post-IPO. Distribution agreements with its cable owners and other cable partners gives it access to 44 million homes.

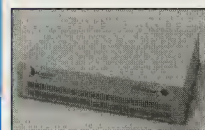
The biggest challenge will be selling a **\$40 to \$50** per month Internet services past the earlier adopters, and keeping enough of the revenue stream to justify its lofty market capitalization. ♦

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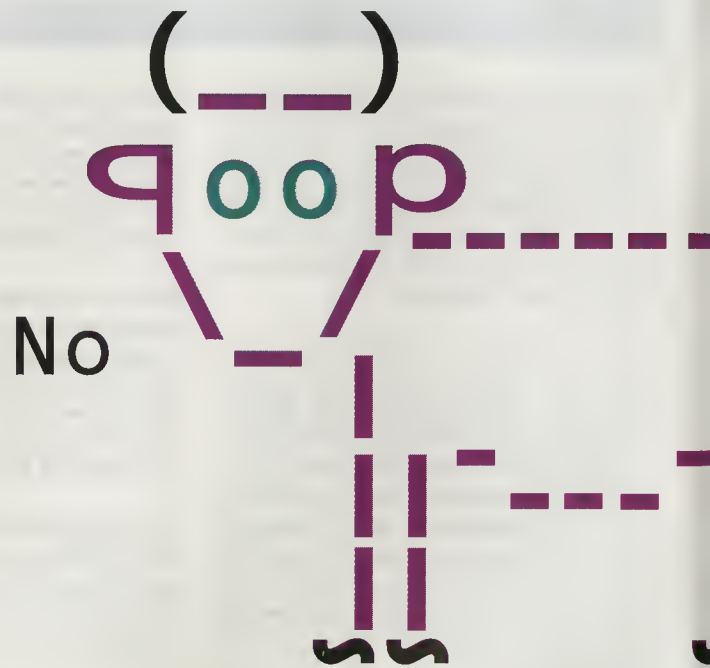
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TUCOWS

Scott Swedorski

GRAPHIC VIEWERS

In the early days of the Web, a good graphic viewer was more important than it is today. Browsers have generally taken over from plain vanilla "viewers." Today's

Internet users need viewers that have image-manipulation capabilities, and sorting and archive utilities. These features allow them add sparkle to their web sites and keep track of image collections.

Scott Swedorski is president and founder of TUCOWS, The Ultimate Collection of Winsock Software. He lives in Flint, Michigan with his wife, Vicky and 2 daughters, Emily and Ashley. After joining the army at the tender age of 17, Scott received his degree in Computer Information Systems from Mott College, and received an Honorable Discharge after 8 years service. Scott welcomes input from Internet users and software developers at tucows@tucows.com.

ACDSee

Version Number: 2.1
Revision Date: May 15, 1997
File Name: acdc3221.exe
Byte Size: 577,796
License: Shareware
Home Page: <http://www.acdvictoria.com>
Also Available: Windows 3.x version

ACDSee is a fast, high-performance image viewer that supports BMP, GIF, JPG, TGA, TIF and animated GIFs. Unlike some viewers, it gives you the option to change your extension preferences when you install the program, meaning that you won't have to reset your preferences later on if you decide not to keep the program. There are no image editing capabilities, but the browser format can display very fast thumbnails and the viewer can display slide shows for each directory, making this program a handy archive manager.



GIF Construction Set

Version Number: 1.0 Patch 4
Revision Date: March 23, 1997
File Name: gifcon32.exe
Byte Size: 1,226,045
License: Shareware
Home Page: <http://www.mindworkshop.com/alchemy/gifcon.html>
Also Available: Windows 3.x version.

It seems you have not arrived on the Web until you have a flaming logo or some other form of animation. For the graphically challenged individuals among us, the idea of creating a moving GIF is a frightening concept, but GIF Construction Set makes it easy. In addition to viewing and creating transparent GIF files, GIF Construction set helps you manage multiple image GIF files and create your own animated

images. You can even convert AVI movies to GIF format, then export the GIF frames into other editors to create custom animation. You may find the lack of multiple file-support a bit taxing for larger AVIs.



Graphic Workshop

Version Number: 1.1x Patch 1
Revision Date: March 28, 1997
File Name: gws95.exe
Byte Size: 1,896,448
License: Shareware
Home Page: <http://www.mindworkshop.com/alchemy/alchemy.html>
Also Available: Windows 3.x version

Graphic Workshop is an image-management utility that can view and convert between a ton of different image formats. You can convert entire archives from one format to another with a few clicks of the mouse. The thumbnail system in Graphic Workshop is a little cumbersome. It adds THN files for each image to your archive directory, which can get in the way of managing them via Explorer. Also, the image-editing interface is counter-intuitive and technical.



HyperSnap-DX

Version Number: 3.03
Revision Date: June 12, 1997
File Name: HySnap.exe
Byte Size: 445,264
License: Shareware
Home Page: <http://www.hyperionics.com>

HyperSnap-DX allows you to capture any part of Windows 95 or Windows NT desktop with simple hot key commands. You can save the captures as BMP, JPG or GIF format graphics. This new version even captures Direct-X applications! Some of the screen captures for this article were obtained with HyperSnap-DX.

LViewPro

Version Number: 2.0.0.1 7/18 Release
Revision Date: July 18, 1997
File Name: lvsetup.exe
Byte Size: 1,358,848
License: Shareware
Home Page: <http://www.lview.com>
Also Available: Windows 3.x version

LViewPro is a terrific image file editor that supports a wide variety of image formats. It has a built-in screen capture and many image filters. Other features include cropping, transparent GIF conversion, and a built-in screen capture utility. LViewPro, however, lacks painting capabilities. LViewPro offers a complex variety of filters and corrective features, and is a helpful addition to PaintShop Pro or Photoshop for advanced graphics enthusiasts.

Paint Shop Pro

Version Number: 4.12 Official Release
Revision Date: January 10, 1997
File Name: psp412.zip
Byte Size: 3,044,380
License: Shareware
Home Page: <http://www.jasc.com>
Also Available: Windows 3.x version

Paint Shop Pro is an excellent graphics program that compares with the likes of Adobe Photoshop. It supports 30 image formats, screen capturing, batch image format conversion, has an integrated image browser, screen capture utility, and includes complete photo retouching. It is a full paint program that supports many of the custom filters and paint brushes that make Photoshop so attractive to digital artists, at a tenth of the price. Some of its features are easier to use than their Photoshop equivalents, while others are more complex. For example, Paint Shop Pro lets you customize your own filters from within the program.

WWW GIF Animator

Version Number: 1.0
Revision Date: April 2, 1997
File Name: wwgifapp.zip
Byte Size: 277,189
License: Shareware
Home Page: <http://stud1.tuwien.ac.at/~e8925005>

A multithreaded, 32-bit animated GIF designer for beginners and experts with an intuitive user interface, WWW GIF Animator supports import from many graphic formats (GIF, JPG, BMP, TGA, AVI, ICO, ANI, CUR, DIB), and is extremely

easy to use. It offers a wide variety of built-in effects and transitions, and speed/size optimizing settings. With this little program you'll be giving Walt Disney a run for his money in no time.

MAC PICK

BigPicture

Version Number: 3.5
Revision Date: January 19, 1997
File Name: big-picture-35.hqx
Byte Size: 268,888
License: Shareware
Home Page: <http://www3.sk.sympatico.ca/tinyjohn>

BigPicture supports a variety of image types, including: PICT, BMP, GIF, JPG, MacPaint, and StartupScreen. It even supports QuickTime movie file formats. You can create your own thumbnail catalogs, presentations and slide shows, scale and print images, and organize image file collections. BigPicture has a simple, friendly, useful, and convenient user interface.

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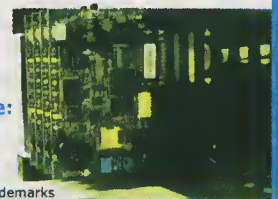
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CONSUMMATE WINSOCK APPS by Forrest Stroud

THE BATTLE OF THE BROWSERS RAGES ON

The applications reviewed here and many more are available at Stroud's Consummate Winsock Apps List, www.stroud.com and <http://cws.internet.com>.

Forrest Stroud currently works in College Station, Texas as a web developer for Mecklermedia Corporation. He recently graduated, with honors, from The University of Texas at Austin. The Information Systems and Data Communications Management major enjoys spending what little free time he has with his wife Joanne and the "zoo" — an ever-expanding collection of dogs and cats that currently consists of a Dalmatian pup (Svoda Pop), a chocolate Lab cross (Roemer), a German Shepherd pup (Marius), and a pair of rascally kittens (Odie Pez and Bo Miggy). Animal lovers can check out pictures of the pets on Stroud's home page at www.tcac.com/~neuroses.

The current preview version of the next major Internet Explorer release (version 4.0) shows that Microsoft is no longer content for its browser to just match Netscape feature for feature — it wants to render the current champ obsolete. While the gap between the two browsers has narrowed considerably, Netscape has continued to retain a slight edge over the contender, an edge that will likely persevere at least until the official release of IE 4.0. The core web browser has long been Netscape's strongest point and the most difficult one for Internet Explorer to overcome. While the 3.0 release of Internet Explorer covered ground that was earlier lost to Navigator, the features introduced in the newest release are drawing the most attention. Microsoft is hoping these features will finally take the client to a level above and beyond its closest competitor. Although the 3.0 release underwent a massive interface change to improve its overall appearance and to make the client feel more like your desktop portal to the Internet, the consummation of this theme has had to wait until the release of IE 4.0. Will an entirely revamped interface and a slew of revolutionary new features be enough to surmount Netscape? The final verdict may still be a couple months away, but the preview release of IE 4.0 shows that Microsoft has already made a strong case for itself.

Internet Explorer 4.0

Desc:	The latest and greatest release of Internet Explorer — now with Active Desktop technology
Pros:	Extremely quick browser, excellent mail client and news reader, Active Desktop technology, freeware
Cons:	Netscape still prevails in several areas, most notably its cross-platform compatibility and core web browser
Location:	www.microsoft.com/ie/ie40
Status:	Freeware
Company:	Microsoft Corporation
Web site:	www.microsoft.com/ie

The initial platform preview release of **Internet Explorer 4.0** was a pre-beta evaluation client intended solely for developers to get a head start in designing applications for the new client. While it did offer a glimpse at what Microsoft intends to accomplish with the next major release of its web browser, there were far too many bugs and features under construction to pass judgment on just how good the 4.0 client will eventually be. The second preview release, on the other hand, is a full scale version of Internet Explorer that, while still

in beta release, is much closer to how the official version will look and function. The most revolutionary (and likely controversial) aspect of the 4.0 release is the Active Desktop, which integrates Internet Explorer with your operating system and transforms your desktop into a virtual web page, complete with hyperlinks and support for ActiveX components. The Active Desktop also brings significant changes to the Windows Explorer, its drag and drop capabilities (one area that still has room for improvement), the Windows traybar, and all of the menu toolbars. The Active Desktop also allows you to add your own ActiveX components to your desktop or download samples from the Microsoft web site or third-party sites. Overall, the Active Desktop does make several impressive improvements to the Windows 95/NT operating system and desktop, but expect reactions to this feature to be extremely polar — users either love it or loathe it. Still, you can bet that this is one feature that won't be going away anytime soon. (Windows 98 anyone?)

Next to the Active Desktop, the biggest change in Internet Explorer 4.0 is the addition of the Microsoft Outlook Express client, a mail and news application that far exceeds the capabilities of its predecessors (IE 3.0's Internet mail and news). Advanced filtering capabilities in both the mail client and the news reader, a more intuitive user interface, support for multiple user profiles, a newsgroup catch up feature, global address books that allow you to look up names and addresses using Internet white page directories, IMAP and LDAP support, and full inline HTML support for mail and news messages highlight an extremely impressive set of features in Outlook Express. One of the coolest features is the ability to send a web page as an e-mail message simply by selecting the "Send Current Document" option from the Mail icon menu. Outlook Express already edges out Netscape Communicator's Messenger and Collabra Discussions tools and even holds its own with the best of the stand-alone clients currently available. But if Outlook Express doesn't meet all of your needs, IE 4.0 gives you an alternative — the ability to choose among several mail and news clients for launching from the IE Mail icon button. These currently include Eudora Pro, Pegasus Mail, Outlook Express, and the Office 97 version of Microsoft Outlook. The client will likely add several more apps by the time the official 4.0 release debuts.

The web browser itself has received several new additions and a multitude of minor changes for the 4.0 release. Of the new additions, the most notable include Dynamic HTML support, Active Channels (a channel-based push broadcasting system similar to Netscape's Netcaster client), inline support for the PNG graphics format (a feature absent in Netscape Communicator), improved toolbars (although they are still not as intu-

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itive or attractive as those found in Communicator), a parental rating system, and an improved Favorites folder. The best of the bookmarking folder's new additions is its web site subscription capabilities, which automatically notify you when a web site that you've subscribed to has been updated. The newest release also gives users the ability to use the left pane of Internet Explorer for specialized Net tasks. The pane can be set up to display your Favorites bookmarks, your web history folder, a dedicated search engine page, or a listing of available Active Channels. Overall, while still in beta, the latest release of Internet Explorer far surpasses earlier versions and definitely gives Netscape a run for its money. Considering that you can download and use Internet Explorer for free (with no strings attached), the battle appears on the verge of tipping into Microsoft's favor for the first time. Will Netscape be able to retain its lead or is the time for crowning a new champ drawing near?

PureVoice

Desc: Cool new technology for sending high-quality voice messages via e-mail

Pros: Voice-encoded e-mail messages, amazing compression rates and quality, freeware

Cons: Both the sender and receiver must have PureVoice installed on their systems, 32-bit release only

Location: <ftp://ftp.eudora.com/eudora/purevoice/windows>

Filename: pvoice???.exe

Status: Freeware

Company: Qualcomm

Web site: www.eudora.com/eudorapro/purevoice.html

PureVoice offers amazing new technology from the same company that has produced one of the oldest (yet still among the best) e-mail clients. In fact, Qualcomm's PureVoice is actually a plug-in extension for both the commercial Eudora Pro and freeware Eudora Light clients as well as a stand-alone player for any other mail client with multimedia MIME attachment capabilities. Like Bonzi's Voice E-Mail, PureVoice is a voice coding client that can send voice messages via e-mail, but unlike its commercial predecessor, PureVoice is available free of charge. It also offers better compression rates and higher quality thanks to the innovative PureVoice and SmartRate technologies. PureVoice and SmartRate are both part of the CDMA (Code Division Multiple Access) standard pioneered by Qualcomm and used in today's most advanced cellular telephones. Using this same state-of-the-art voice-encoding technology, PureVoice manages to combine high quality with excellent compression rates. The voice-coding technology in PureVoice compresses an incoming voice message to store it in the most compact digital format possible while still preserving the highest quality feasible. Users are given the option of maximizing voice quality at the expense of a slightly lower compression rate (PureVoice technology) or maximizing the compression factor at the expense of slightly lower quality (SmartRate technology). In either case, the voice messages that result are more than 10 times smaller than .wav and comparable files, yet sound as crystal clear as a normal phone call.

PureVoice works with Eudora and other MAPI compliant clients as a plug-in — all you need to do is record your voice message and press the Attach button. PureVoice handles the rest as the preferred mail client is opened, with a new message window and the voice message attached. For non-MAPI compliant mail

clients, you'll need to first save the PureVoice voice message and then manually attach it to a new message using the client's normal attachment capabilities. As long as the mail client is a Windows 95/NT 32-bit client that offers both MAPI and long filenames support, you'll be able to use it to send PureVoice encoded messages. As with Voice E-Mail, the only real downside to PureVoice is that unless both the sender and receiver have copies installed on their systems, the technology is wasted. For this reason, look for future releases of Eudora Pro and Eudora Light to include the PureVoice plug-in, making the technology available to an installed base of more than 18 million users. The difficult part will be getting additional mail clients to package PureVoice so that PureVoice users won't have to worry about their recipients not having the player. Only when enough people are utilizing PureVoice on their systems will this technology be able to realize its full potential. Still, with a freeware price tag and some amazing technology on its side, PureVoice should definitely be a player in the voice mail scene that is just waiting for a chance to explode onto the Net.

SocketWatch

Desc: Excellent app for synchronizing your computer's clock with standard Net time

Pros: Efficient and automatic synchronization of your computer's time clock with standard Internet time

Cons: There are less expensive clients available, but none offers as many features as SocketWatch

Location: www.locutuscodeware.com/sswatch.zip

Status: Free 30 day evaluation. Shareware : \$10

Company: Locutus Codeware

Web site: www.locutuscodeware.com/swatch.htm

SocketWatch is one of the best clients available for helping you synchronize the time clock of your local computer with standard Internet time. One of the reasons SocketWatch stands above the competition is that the client handles everything for you, from placing itself in the Windows start-up group to automatically connecting to and disconnecting from the Net using the Windows 95 Dial-up Networking utility. While the client can be run manually, SocketWatch is at its best when running by itself. Operating in the background, SocketWatch monitors for when you connect to the Net and then automatically connects to a time server and synchronizes your clock. SocketWatch also uses the time zone and daylight savings features of Windows 95 to further ensure that your computer's time remains accurate, without the need for reconfiguring your settings each time a remote server is contacted. Perhaps its best feature, SocketWatch's Smart Server Search automatically scans through a list of more than 100 public access time servers and quickly finds the one that will give you the quickest and most accurate time synchronization. Because of its large database of time servers, rarely if ever is SocketWatch affected by the performance of a busy or inactive server. SocketWatch even works with the Timex DataLink watch. Any time you download data to your watch, SocketWatch sends its time information as well, ensuring that your watch always has the correct time. A final feature in SocketWatch allows the client to be run as a Windows traybar icon. Overall, at just \$10, it would be hard not to recommend SocketWatch as a must-have Net app — this is one app that is definitely worth its weight in gold. ♦



LINUX REDUX

by Alan Cox

WHAT NO FIRE-WALLING?

Well, yes, I did promise to include more on firewalling this month, however the people who are checking it over for me haven't finished yet. Needless to say, wrong advice on security isn't something I want to chance.

OF ALIENS, MICE AND DMA JUNKIES

I hoped to present the great Macintosh 68K Linux announcement a while ago, but not all has happened the way it was intended. To start, Apple themselves seem true to their post Apple-II form. Everything to do with Macintosh hardware is nondisclosure and not discussable. They even refuse to discuss things they have documented in tech notes or other places.

Anyway, as several vendors have found (notably Sun), not documenting your system merely slows things down. As I write this, several people are running Linux on 68020/030-based Macintoshes. Not everything works yet, but it's getting there. You might want to take a look at <http://macintrash.cymru.net> and <http://maclinux.ml.org>. If you've got a 68K Macintosh holding your door open and you want to discover the innards of the Macintosh, you'll be welcomed. Do remember to bring a detective or two along. If you want to make your Mac 68K box useful again, look at www.macbsd.com. The MacBSD folks did a lot of the groundwork on answering how a Macintosh works.

Why aliens and DMA junkies? Well, when you find a tech note called "space aliens ate my mouse" is the best source of information on the Mac keyboard/mouse drivers, you start to appreciate how tight Apple is. It's always reassuring to know the people who sold you a machine want to control how you use it, and to make you upgrade when they say so. The curious can take a look in the Apple tech notes on www.apple.com to find out about DMA junkies.

We aren't the only people wishing Apple would be more sensible — the OpenMac effort started by the MacBSD people (<http://puma.macbsd.com/openmac>) contains some good references on Macintosh hardware. Anyone out there who happens to know Mac hardware internals and is allowed to tell people, without being lobotomized, will be very, very welcome in all communities.

Personally, I think the hardware is mostly undocumented for fear of embarrassment. If this wasn't a family magazine, I'd tell you how the 400 K Mac floppy drives work.

LAPTOPS AND LINUX

I talked a bit about the PC110 a while ago (and indeed I'm typing this on the PC110 on the train). While it's a neat toy, it's not the only laptop.

There are a surprisingly large number of Linux laptop resources, in part because every laptop vendor finds an exciting, new incompatible way to design their machines. To be fair, a lot of it is the extra tools needed in the laptop world, and how to use them. The master site is www.cs.utexas.edu/users/kharker/linux-laptop. Almost every Linux laptop resource can be found there.

The good news is that most distributions are "laptop ready." If we want to be buzzword-of-the-month compliant more like "containing laptop mobile operation functionality enablement." Are the U.S. press this bad too?

Power consumption and PCMCIA cards are the two big items for a laptop. In general, power consumption is handled by intelligently turning off bits of the machine that are not in use. The standard for this is called APM. Except for very old laptops, there should be no problem with finding this feature. On laptops without APM support, Linux may not be able to control power, and the machine will run its batteries down quite rapidly.

APM in Linux is handled both by the kernel, and optionally by a userspace daemon called "apmd" that handles logging of APM events. The kernel itself talks to the BIOS power management software and tells the BIOS what it wishes to do. With APM running, the Linux system will use the same, or less, power than Windows/DOS and hardware devices will power down on idle.

APM generally doesn't manage hard disk power and spin down. The IDE disks take instructions and manage their own spin-down time-outs. Thus, on both APM and APM BIOS machines, you can use "hdparm" to control the spin-down time on most disks. Some older disks don't support this feature. I use this for less accessed disks on my home system too — they are set with "hdparm -S 45 /dev/hda" and spin down after 3 3/4 minutes.

PCMCIA is the majorly unique item about laptops, although nowadays on some desktop machines. PCMCIA cards are unusual because you are able to "hot swap" them. This requires the OS to dynamically load and unload boards as well as manage their resources. Dave Hinds wrote most of the Linux PCMCIA package, which is included with most distributions. It does take a bit of setting up for your own configuration, and a novice should definitely budget an hour with the laptop and a cup of coffee. Fortunately, the PCMCIA-HOWTO document is very complete. (All the HOWTO documents are on <http://sunsite.unc.edu/mdw/linux.html>.)

Alan Cox is the Technical Director of CymruNet, a leading Internet service provider in Wales, United Kingdom. Cox is also a member of the Linux International Technical Board and the CERT Vendor contact for Linux. He maintains the <http://www.uk.linux.org> web page and leads the Linux Networking Project, the project to port UNIX to shared memory multiprocessor architectures, and a project to port Linux to 8086 embedded controller systems. Send e-mail to alan@cymru.net

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The PCMCIA services are controlled by configuration files in /etc/pcmcia. On Red Hat you also need to turn them on in /etc/sysconfig/pcmcia if you didn't tell the install program you had PCMCIA. On my machine it looks like this:

```
PCMCIA=yes PCIC=i82365 PCIC_OPTS= CORE_OPTS=
```

The important entry is PCIC= which tells PCMCIA services which of the two standard interfaces you have. (Ever wondered why "one" and "standard" so rarely appear together?) The other setting is "PCIC=tcic" for the Databook TCIC type controllers.

Having set this up, the system on boot will load the kernel PCMCIA services and run cardmgr, a daemon whose role in life is primarily to go "beep" when you insert and remove cards. It also runs scripts for each card and loads modules for the device. As there are a large number of PCMCIA cards in the world, it's not desirable to have them all permanently in the kernel. Using modules as pcmcia-cs also means you won't have to build new kernels to use other cards. At most, you will need to tell pcmcia-cs where you would like disks mounted or how to configure PCMCIA network adapters.

Whenever a card is inserted, cardmgr identifies it and runs the relevant script. These generally do what you would expect. CD-ROM drives are mounted on /cdrom, IDE drives on /mnt and so on. You can generally use these defaults or add your own entries. The cardmgr passes an ID to the script so that you can do different things with different disks. For example the IDE driver is called with the string *scheme,slot,serial*. We might add rules that **,2,** is mounted (*** is a wildcard pattern in UNIX much like DOS) on /mnt2 so we can mount disks automatically in both slots. A read of the /etc/pcmcia scripts and the HOWTO covers this well.

Finally, PCMCIA under linux has "schemes." These are how the first argument is passed to each script. You can use schemes to completely change your setup — perhaps between work and home.

Well I started this article complaining about something, so I'll end with something people always complain about — getting

cryptographic software. There are a lot of useful crypto tools for Linux, although most vendors don't ship them due to U.S. export rules. My favorite source is <ftp://ftp.replay.com/pub/replay/pub/redhat>, which provides ready-to-install, prepackaged Linux ports of tools like PGP, SSLeay, and the ssh secure shell. If you are in the United States, make sure you get the U.S. versions of software when there are international editions available. Often, the U.S. version is different to avoid the rather bizarre (to outsiders anyway) concept that you can patent a mathematical statement of fact.

If the tools you want are not prepackaged for Linux on replay, then take a look at the excellent Oxford crypto archive on <ftp://ftp.ox.ac.uk>. If it isn't on the crypto archive, then it probably doesn't exist.

Caldera has been adding to its repertoire of commercial applications with the addition of AppGen Power Windows. Fairly unique in aiming at the world of big, corporate IS departments, they are amassing a quite serious array of bundled and extra packages, as well as having the large scale backing and image needed for their environment. I wish them well. The ongoing plan to port Linux to every computer on the planet took some more steps forward beyond just the Apple Macintosh. Dave Miller released the first test distribution of Linux/Ultra-SPARC64. A full 64bit port as the ultra-SPARC hardware is 64bit, even if Solaris is still 32.

SGI has been helping the Linux community port Linux to SGI hardware in quite a large way. It has been providing SGI machines and documents to Linux developers and other free software folks, both to get Linux running nicely on them and to further free software availability on their own Irix OS. If you've got an SGI and you want to join in the fun, look at www.linux.sgi.com.

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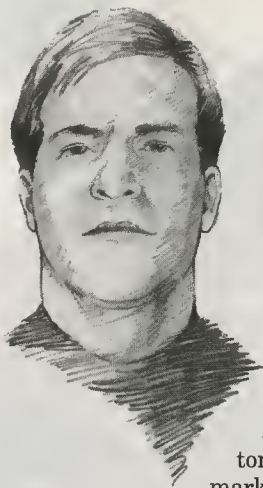
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PROTECT YOUR TRADE AND SERVICE MARKS

ISPs should be informed about the important trademark law implications of conducting interstate commerce over the Internet, and should be informing their business customers as well. Trademark law currently protects a mark used to identify a product or service in commerce, but does not yet guarantee protection for domain names associated with products or services.

The recent explosive growth of the Internet has exceeded the expectations of even the most visionary observers. As a form of mass communication, the Internet is maintaining steady and substantial growth, currently supporting tens of millions of people. The mass Internet market primarily uses the Internet to send and receive e-mail, and browse. A growing area of the Internet is Internet commerce — the buying and selling of goods and services over the Internet. Although Internet commerce is currently minimal compared to commerce conducted through other traditional means, its growth potential is geometric. President Clinton has stated that Internet commerce will increase from the current **\$2 billion** per year to **\$20 billion** by the year 2000. These numbers are not insignificant.

The potential for commerce on the Internet is making it both desirable and necessary for small and large business to initiate some type of Internet presence, and to begin advertising, marketing and selling products and services over the Internet. The Internet has permitted numerous businesses that formerly engaged exclusively in commerce on either a local or statewide basis, to instantly engage in interstate and international commerce.

When a business that was formerly engaged in commerce on only a local basis begins to market and sell its products and services over the Internet, common law and federal trademark laws are triggered as a result of that company's activities in interstate commerce. Federal trademark laws are designed to protect entities against infringement by other parties of their trade and/or service marks in interstate commerce. Registrations also serve to provide notice to parties who may unknowingly be potentially infringing the trade or service mark of an entity who has already registered that mark. Early knowledge that another party already owns a trademark prevents violations, and helps avoid potentially costly business losses for parties who must stop using a trademark because it is already registered to, or in use by, another party.

The United States Patent and Trademark Office (PTO) (www.uspto.gov) defines a trademark as "either a word, phrase, symbol or design, or combina-

tion or words, phrases, symbols or designs, which identifies and distinguishes the source of the goods or services of one party from those of others." A service mark carries the same definition as a trademark as to the source of a service. Most trademarks appear directly on the packaging of goods, whereas, service marks typically appear on advertising such as newspaper ads, Internet web sites, etc.

ISPs should pay special attention to the trademark implications triggered by engaging in interstate commerce. Many ISPs service more than one state, and market and sell products and services outside their home office state using special trade and service marks over which they would claim ownership. Certainly, any ISP offering products or services over a web site and conducting business across state lines should ensure that their trade and service marks are protected, and that their use of particular trade and service marks does not infringe on the rights of an entity that already owns those marks.

ISPs are also responsible for providing web site design, implementation, and secure transactions services to many business customers who are now beginning to engage in interstate commerce by selling their products and/or services over the Internet. As the providers of the medium over which these online transactions take place, ISPs should be informing their business customers about the potential trademark implications of conducting business over the Internet.

While there is no requirement to register a trade or service mark with the PTO, the entity who registers a particular mark first will be in a good position to later enforce the ownership of that mark against infringement. For example, if ISP A advertises a trade or service called X (its trade or service mark name) over its web site, it is engaging in interstate commerce. ISP A would want to protect the trade or service mark against infringement by another party, since ISP A's use of that mark reflects on ISP A's business. If another entity begins to affiliate ISP A's mark X with its own product or service, the average consumer might become confused about the company with which that product or service is actually associated. ISP A could be harmed as a result. If ISP A were the registered owner of the mark, and was harmed by a potential infringement, there would be a presumption in any infringement action brought by ISP A that ISP A is the valid owner of the mark.

To register a trade or service mark, an entity must complete an application and forward it to the PTO. The application can be for a mark currently in "use" in commerce, or for an "intent-to-use" in commerce

Rudolph J. Geist is a telecommunications attorney with the Washington DC firm of Wilkes, Artis, Hedrick & Lane specializing in and helping to develop the area of Internet law. Mr. Geist represents ISPs in numerous matters, including relations with other telecommunications providers, consultation regarding federal telecommunications grant programs, federal, state and local taxation issues, First Amendment issues, domain name and IP address allocation issues, and mergers and acquisitions. He also serves as counsel to the United States Internet Providers Association (USIPA), a national trade association established to facilitate fair government and telecommunications industry policies for ISPs. Mr. Geist can be contacted via e-mail at rgeist@wahl.com, telephone at (202) 457-7345, or through USIPA's World Wide Web site at www.usipa.org.

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mark. Registration of a mark in use will typically be granted if the entity is using the mark in interstate commerce at the time of the application, the application is complete, and no conflicting marks are in existence. To register an intent-to-use mark, the entity must plan to use the mark in interstate commerce, the entity's application must be complete, with no conflicting marks in existence, and the entity must file a statement with the PTO at the time the mark is actually in use before it will finally be registered.

Applicants for trade and service marks should conduct a search for conflicting marks before filing the application. Failure to search for conflicting marks could result in denial of the application and loss of application fees. This is because the PTO, among other reasons, will deny an application which it deems will likely lead to confusion with an already registered mark. However, even if a search identifies a potentially conflicting mark, the application might still be approved if the applicant can show that its use of a mark which is similar to a registered mark will not be damaging to the registered party.

An interesting development in the area of trademark law is trademark protection

for domain names. Remember, trademark ownership is completely different from domain name registration with InterNIC. At this time, there is no trademark protection for domain names, although the PTO is currently considering the issue. However, ISPs and their customers should file intent-to-use applications with the PTO for the domain names which they currently associate with a service or product. Filing an intent-to-use application for a domain name with the PTO now will help to ensure that if and when the trademark laws are changed to grant protection for domain names associated with a product or service, the entity filing the application will obtain registration for that mark as used for the particular product or service.

Currently, an entity who registers a .com domain, for example, cannot ensure that another entity will not obtain the use of the .net, .org, or .any gTLD, with the same corresponding name, making it a very similar domain or mark. This often leads to confusion when web users type in the wrong suffixes and the wrong web sites appears on their screens. Further, it can potentially harm an entity's business if a product or service associated with the similar domain name would cast a negative light upon

the business entity sharing that similar domain. If an entity obtains trademark protection for a domain name, there is a good chance that it could bring a successful infringement action against any other entity using a confusingly similar domain name for similar products or services in interstate commerce.

Registering trade and service marks has quickly become much more important, as numerous entities who were once local businesses have instantly begun engaging in interstate and international commerce over the Internet. The ownership, control and right of a company to use its trade or service marks is of the utmost importance to the maintenance and facilitation of its particular type of commerce. Further, for entities who are beginning to associate products and services over the Internet with particular domain names, the ownership, control and use of these marks is equally important. ISPs should ensure that their trade and service marks are protected. Further, as a service to their business customers, ISPs should educate them about the implications. Registering trade or service marks at a minimum will help to guard against potentially substantial future conflicts with entities using the same or similar marks. ♦

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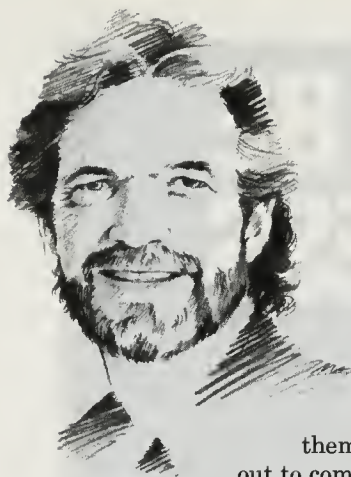
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MANNING THE WIRES

by Ric Manning

NEWSPAPERS PREPARE FOR MICROSOFT ASSAULT

Newspaper executives were more than a little skeptical last year when Microsoft Chairman Bill Gates told them at an industry meeting that he was not out to compete with them.

But that attitude changed when Microsoft and its followers began to focus their attention on individual cities.

SIDEWALK (www.sidewalk.com)

Ric Manning is a columnist and web master for *The Courier-Journal* in Louisville, Kentucky. His weekly column covers computers, consumer electronics and the Internet and is distributed to more than 100 newspapers by the Gannett News Service. It's also available on the World Wide Web at <http://courier-journal.com/gizweb>.

Ric was the founding editor of *Plumb and Bulletin Board Systems*, two newsletters that covered the BBS arena in the early 1980s. His freelance work has appeared in several magazines including *PC/Computing*, *Mobile Office*, *PC Week* and *Home Office Computing*. Ric lives in Southern Indiana with his wife, two children and two Weimaraner dogs.

If that's true, they said, then why is he hiring reporters, editors, and critics for Sidewalk, Microsoft's web-based service that focuses on events and activities in America's larger cities? Why is Microsoft running ads in trade magazines telling auto dealers they can put their entire inventory online "for the cost of one newspaper ad?" Why does Sidewalk solicit classified ads if Microsoft doesn't want a piece of the newspaper industry's \$6 billion cash cow? And why did Microsoft announce in July that it plans to create a new product for Microsoft Network in partnership with another long-time newspaper client, the nation's Realtors?

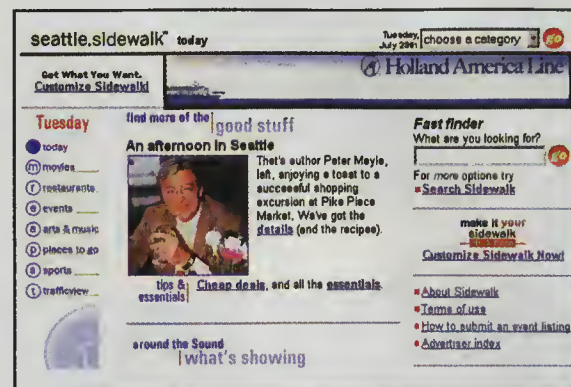
To Bob Cauthorn, director of new technology at the *Arizona Daily Star*, the goal of Microsoft's Sidewalk and America Online's Digital Cities product is clear: "They mean to destroy us."

Bob Ingle, president of New Media for the Knight-Ridder newspaper chain and the man who put the *San Jose Mercury-News* online, believes Microsoft has the newspaper industry directly in its sights. "It seems clear that Gates has analyzed the newspaper model and concluded that we are vulnerable," he said. "The bad news is, it seems to be working."

Speaking in July at the annual Newspaper Association of America conference for newspaper online managers in San Francisco, Ingle prodded newspaper executives to be ready for battle. "It is critically important that people at the top give this a sense of urgency," Ingle said. "Microsoft spends \$400 million a year to develop content for Sidewalk. I doubt that the entire newspaper industry is spending \$400 million on new media."

Newspaper publishers could afford to ignore Microsoft when it was flattening its competitors in the software business. Even when Microsoft created its own online service and began dabbling in electronic publishing, newspapers paid little attention. *Slate* hardly seemed like a threat to local newspapers.

Jim Townsend, online content manager for *Houston Chronicle Interactive*, said newspaper people who wanted to put their publications online still get the brush-off from their bosses. "They say there's no money there or go away, I've got a newspaper to run," said Townsend.



Microsoft's Sidewalk web sites are up and running in Seattle, Boston, New York, and Minneapolis, and the company says it will have 15 more city webs online by the end of the year.

A typical Sidewalk site lists movies, arts, sports, music, and related events plus a dining guide and restaurant reviews. Listings are compiled in a database which makes it easy for viewers to search for their favorite artists or look up the schedules for their favorite clubs. Sidewalk's news partners are more often alternative weekly paper rather than the local daily.

Cella Irvine, general manager of New York Sidewalk, calls her product "a virtual entertainment butler. . . something that is out on the streets every day, combing through what New York has to offer." She said Sidewalk also has a strong consumer focus and tries





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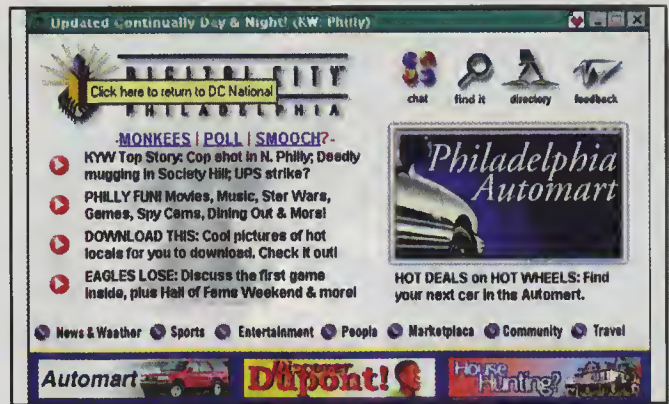
CITYSEARCH (www.citysearch.com)

CitySearch is already operating in eight cities, including Austin, Nashville, New York, Pasadena, Portland, Salt Lake City, San Francisco and the Raleigh-Durham region of North Carolina. The company recently signed deals to create services in Los Angeles, Washington, DC, and Toronto in partnership with the major newspapers in those cities.

CitySearch plans to make money by creating and maintaining web sites for local businesses, including restaurants that want to put their menus online.

DIGITAL CITY (www.digitalcity.com) and AOL Keyword: Digital City)

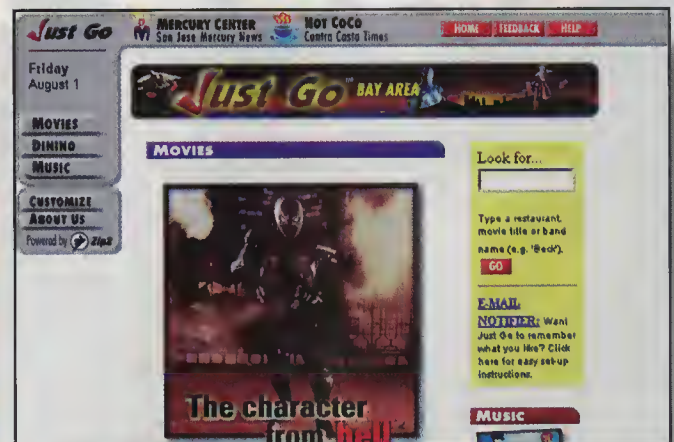
America Online has Digital City covering 20 cities with access to the site from AOL and the Web. Digital City courts local media partners with a promise of high brand visibility and a pipeline of traffic to the media's site. If Digital City can't partner with the local newspaper, as it has with the *Tribune* in Chicago, it works with a local radio or TV station or an alternative publication. In Philadelphia, for example, news and other content is provided by KYW Radio.



"Local" is emerging as a distinct new media segment," said Rick Blair, the AOL vice president in charge of the Digital Cities project. "We think we're an entirely new medium, a hybrid of the community newspaper."

Newspapers are scrambling to respond. In some cases they have become partners with their adversaries. A few have even paired with Microsoft. "You can't ignore them," said W. Dean Singleton, the president and chief executive officer of Media News Group Inc., which owns the *Denver Post*. "If publishers won't play ball with them, they'll do it on their own."

Knight-Ridder responded by partnering with Zip2 to create local services it calls "Just Go" (www.justgo.com). The first to go online is a combined service of two Knight-Ridder papers that cover the San Francisco Bay Area, the *San Jose Mercury-News* and The *Contra Costa Times*.



The company is also pushing hard-to-sell directory listings in Philadelphia and Miami where the local papers have sent out waves of sales people to call on small business that don't normally buy high-priced newspaper ads. So far, the papers say the response has been disappointing.

Knight-Ridder's Ingle says newspapers have been far too slow to recognize the threat from Microsoft and other online publishers. Any newspaper executives who want to go slow in online publishing because they don't see any immediate reward, he said, "are going to find themselves in a deep ditch." ♦

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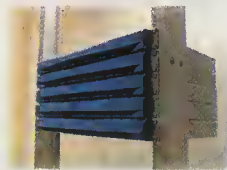


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EURO NEWS

Richard Baguley

THE LAW AND THE NET

Lawyers in the U.K. have been having a field day on the Internet recently, with two landmark cases fundamentally altering the way that people may use the Internet in future.

Richard Baguley is the technical editor of *Internet Magazine* (www.emap.com/internet), the U.K.'s biggest selling Internet magazine. He has also an ex-editor of *Internet Today* magazine and *Amiga Shopper*. His freelance writing has appeared in publications such as *Mac Format*, *.Net* and *Wired News*.

He lives in North London and spends lots of his time looking out of the window at the rain.

He can be contacted at baggers@baggers.com.

The first case concerns two insurance companies — Norwich Union healthcare and Western Provident. This case centered on a number of e-mails that were sent internally within Norwich Union. During 1995, someone in the company started circulating rumors about the financial position of Western Provident, a rival medical insurance company. These rumors were spread by e-mail. These messages alleged that the company was in financial trouble and was about to stop issuing new insurance policies. These rumors spread throughout the company and were also passed onto clients of the company. Eventually, Western Provident heard of these rumors and called in the lawyers. They went to the courts and got a court order forcing Norwich Union to hand over copies of the messages. When the case came to court, Western Provident was awarded **£450,000 (US\$280,899 approx.)** in damages. This case is interesting for two reasons. First, many people had assumed that e-mails would be immune to libel charges. Most people regard e-mail as being rather like chatting down at the pub — you can say what you want without fear of being sued. What this judgment means is that sending an e-mail is now legally regarded as being the same as printing something about a company or individual, which could lead to a court case and some heavy duty damages. Western Provident commented that "People regard electronic mail as a transient medium. The reality is that everything you type and send is recorded almost for all time and is available to be re-assembled at a later date. As this settlement shows, they can be libelous."

The second interesting point is that Norwich Union kept backup copies of the e-mail messages. While it isn't unusual for many companies to keep copies of correspondence (especially companies who deal directly with money, such as banks or insurance companies), this is the first time that such backups have been used in this way. If they hadn't kept copies of e-mails from two years ago, the case would have been much more difficult to prove. However, because they kept backups, they had no choice but to hand copies of the messages over and provide the other company with the evidence they needed to win the case. It seems likely that this may change the policies of many companies on backing data up — how many companies are likely to want to hang on to evidence that could be used against them in court? Is that the

sound of a thousand backup tapes being destroyed I hear in the background?

INJUNCTIONS BY E-MAIL

In the second recent case, a U.K. court recently gave permission for an injunction to be served over the Internet to a blackmailer. The blackmailer allegedly sent an e-mail to the U.K. law firm Schilling and Lom, threatening to spread libelous information about a client over the Internet. The law firm then went to court to obtain an injunction stopping the blackmailer from distributing the information. When the injunction was granted, the lawyers asked for permission to serve the injunction by e-mail.

As in most countries, in the U.K. there are very specific rules concerning how an injunction has to be delivered, and these did not include sending it by e-mail. So, the lawyers asked the judge to decide whether this was an acceptable method of delivery, and he decided that it was. Of course, there has to be some way to prove that the injunction has been received and read by the person it is aimed at. This was done by requesting a receipt, which the sender's computer supplied. According to the lawyers, this was also backed up by an acknowledgment from the alleged blackmailer that he had received the injunction through other means.

This case raises a number of issues. If, as seems likely, the alleged blackmailer was not in the U.K., there is the question of jurisdiction. Which set of national laws apply if the blackmailer had posted the information to a Usenet newsgroup? Could the legal system really stop the distribution of the information in every country connected to the Internet?

When the U.K. government attempted to stop the distribution of Peter Wright's book, *Spycatcher* (which contained allegations that the secret services were trying to undermine the government in the 1960s), they had to try to stop publication in each country, one by one. In fact, they didn't bother with many countries — it was freely available in the U.S. while distribution was stopped in the U.K., and many people bought copies abroad and brought them back to the U.K. Eventually, the government realized that it simply wasn't worth the hassle, and allowed it to be distributed.

Some lawyers are worried that this could set a precedent — much of the body of law in the U.K. is based on precedents set by judges making rulings in court cases. However, there have been no other similar cases and it seems unlikely that other judges would be willing to allow this without a very good reason

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IRELAND TAKES A LOOK AT THE INTERNET

The government of the Republic of Ireland has joined the large number of European governments looking at how to deal with the Internet. The Department of Justice (with a web site at www.irlgov.ie/justice) has set up a working group on "Illegal and harmful use of the Internet." The group will be looking at all aspects of this, including the problem of child pornography and wider issues, such as examining "the current approaches both domestically and internationally to addressing Internet issues." The working group will consist of government representatives and members of the Irish Internet business community. They will produce a series of recommendations for the government, which may then be incorporated into future legislation. The group is currently accepting submissions from the public (both in Ireland and abroad) as to what to do and how to do it.

The Irish government joins a long list of European governments looking at the

issues the Internet raises. The U.K. government is working with the Internet Watch Foundation to produce a system for rating web pages and Usenet newsgroups. The German government is working on legislation to determine who is actually responsible for producing and censoring Internet content, following a series of high profile arrests and charges over child pornography that was allegedly available through several different German service providers.

MINISTERS SUPPORT STRONG ENCRYPTION

A conference in Germany this July proved rather unusual — ministers representing 29 European countries managed to agree on a declaration on a number of issues relating to the Internet. These included Pan-European cooperation to develop the Infrastructure of the Internet and promoting the use of the Internet in areas such as health care. If you're interested, you can read the entire declaration at www2.echo.lu/bonn/final.html. The section on encryption is particularly interesting. This talks about how they "recognize the importance of the availability of strong encryption technology for electronic

commerce." It also says that they "will work to achieve international availability and free choice of cryptography products and interoperable services, subject to applicable law."

Now this all sounds great — the ministers have confirmed that they support the right of people and companies to use strong encryption both in their products and in their communications, which is what the advocates of encryption have been telling them to do since strong encryption became widely available. Meanwhile, the U.S. government is still spending significant amounts of time and effort trying to restrict the spread of strong encryption outside of the U.S., claiming that it could be of use to terrorists, criminals and other people they don't like. So Europe is united in its desire to make strong encryption available to all? Nope. Definitely not. As with all agreements of this type, it's a compromise between those who want it as a tool to help hi-tech companies in Europe get an edge over the U.S. and those who want to restrict the use of encryption on political grounds. It's rather like 29 people going into an Indian restaurant and trying to decide on one single dish — you end up with something bland which

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So, they agree on a compromise, which is in the form of the last part of the sentence — "subject to applicable law." What this means is that any state that signed the final declaration is free to ignore it by passing laws that will restrict the use of encryption. In fact, some countries have already passed laws of this type — encryption in France is restricted to systems that have government approval (and which can be broken by the government if required), making it technically illegal to use an encryption program such as PGP. In fact, Netscape was forced to do a special French version of its Communicator suite, as the mail client included a mail encryption system which wasn't approved. So whatever you may hear, Europe is still some way from speaking with one voice on the subject of encryption, let alone anything else connected with the Internet. While high-level ministerial meetings like the one in Bonn may make high sounding statements on how things should be better, individual

countries are free to ignore this and carry on with their own agendas of restricting people's access to encryption.

INTERNET NAMING WORKS IN THE UK

Those of you who have been watching the recent fun and games between AlterNIC and InterNIC in the U.S. may be further amused to find out that, in the U.K. at least, there is a naming system that works fine without people having to steal each others domain names and start suing each other.

The U.K. hierarchy is handled by a non-profit company called Nominet (www.nominet.org.uk), set up to take over from the academic bodies that previously handled it. The company is run by a steering committee composed of people from the Internet industry which determines how to administer the domains within the .uk hierarchy. As it's a non-profit company, any profits made from the charges levied for domain are plugged back into the company, leading to a consistent fall in the price of domain names. The system isn't perfect (it hit problems when it started, as the amount of domains that were registered had been

underestimated), but it works. Companies can quickly and easily register their domains and there is also a well defined policy in case of name disputes. Could it be that the U.K. has found the answer to the problems of running a top level domain name registry that has so long eluded the rest of the Internet? ♦

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Steve Stroh learned wireless TCP/IP networking as an amateur radio operator (callsign N8GNJ). He's one of the founding members of the Puget Sound Amateur Radio TCP/IP Group and is secretary for Tucson Amateur Packet Radio (TAPR), a national not-for-profit amateur radio research and development corporation that specializes in wireless digital communications.

Professionally, he's a NetWare and Windows NT administrator for a large company. He's done battle with UNIX a few too many times and mostly lost, so now he's learning Linux and BSDi in preparation for his next UNIX challenge. Steve lives in Woodinville, Washington (in the shadow of Redmond) with wife Tina and daughter Merideth. He can be reached at steve@strohpub.com.

Like much of the nation, I was fascinated as the Mars Pathfinder touched down on July 4th. I'm not a cable or satellite TV subscriber, so I'm not sure how the cable channels were covering the Pathfinder mission, but coverage on CBS, ABC, NBC, PBS, and Fox was pretty pathetic. But in 1997, if you want to know more, you go to the Internet. So I began browsing the Web and soon I found, on MSNBC, a real-time RealAudio feed of the audio from the Jet Propulsion Laboratory. I spent several hours listening, in real time, to the JPL controllers during those first critical hours of the Pathfinder touchdown. Sometime during those hours I lost my remaining interest in broadcast television. Here was one of the most fascinating stories of the 20th century, and the television networks were running soap operas.

If I had had a faster link and faster hardware — 128 Kbps ISDN or better — I probably would have tried to find a video feed, but the images posted to the Pathfinder web site (with multiple mirror sites) were excellent compensation. My heartfelt thanks to the crew at the JPL for such a wonderful gift to humanity as the Pathfinder mission. Also, my congratulations and thanks to MSNBC for providing the JPL audio RealAudio feed that I found.

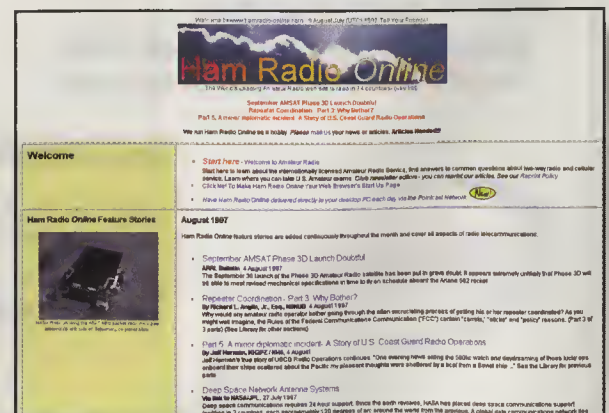
I read an excellent article published shortly after the Pathfinder landing on the cultural relevance of the Pathfinder mission. It stated that the Pathfinder mission was the defining moment of the Web as a mass medium, just as the Gulf War was for CNN, the Kennedy assassination was for television, and World War II was for radio. Those that really wanted more information could actually *go and get it*, and that was very, very different from the previous forms of mass media. This article captured exactly how I felt with my Pathfinder "web versus television" story — television had its time as a provider of passive, lowest common denominator content, but now it's the age of the Web — you find the information you're looking for rather than hoping that you'll notice it when it comes by. (Normally I would provide the link to the actual story, but the site where I found the article has expired it, and it's apparently no longer accessible. Like most print publications, they just don't completely get the idea of posting and *leaving* them available online.)

To its credit, NASA anticipated (but still underestimated) that there would be intense interest in the Pathfinder mission, and interested persons would seek more detailed information about it on the Internet.



One of the coolest aspects of the Pathfinder mission was that Sojourner, the rover vehicle, was linked back to Pathfinder with a 9600 baud radio/modem that had to be only slightly modified for use in on Mars. One of the more interesting tradeoffs made between cost and performance on Sojourner was that it was more cost effective to simply keep the radio and modem warm (at "reasonable" temperatures) rather than to build a radio and modem capable of enduring the intense cold of a Martian night. You can find some excellent links to detailed information on Sojourner's communications systems at Ham Radio Online (www.hamradio-online.com). Ham Radio Online is run by a fellow Seattle-area amateur radio operator Ed Mitchell and his wife Kim as a hobby, and they do an excellent job with it.

The other media event with perhaps the *ultimate* use of wireless data twist is the movie *Contact*. After seeing it, I recommend it highly. It opens with a young amateur radio operator trying to work some "DX" (a distant contact) — a promising start! Watch



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for the line "I need a bigger antenna..." I'll again recommend Ham Radio Online for a number of excellent links to sites related to *Contact* and its theme.

STANDARDS

Wireless networking now has its first (to my knowledge) formal, non-proprietary standard! At its June 26, 1997 meeting, the Standards Activity Board of the Institute of Electrical and Electronics Engineers (IEEE) approved IEEE Standard 802.11. The 802.11 protocol defines a wireless networking standard for use in the unlicensed 2.4 GHz band at a data rate of 1 or 2 Mbps. Before 802.11, the only way to insure interoperability between wireless systems was to use the exact same systems from the same manufacturer. It's expected that 802.11 will begin the process of manufacturers competing on the basis of price and performance within a standard, much like higher speed telephone modems have evolved from proprietary standards like US Robotics' HST to public standards such as V.34. Of course, manufacturers with wireless networking vendors will differentiate their products by stating "Compatible with 802.11 *plus* a faster mode that works only with our products. Fortunately, work is already underway in the IEEE to a follow-on to 802.11 that will potentially increase the data rate to 20 Mbps. For information on 802.11, check out <http://standards.ieee.org>.

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In previous columns, I've discussed the Wireless National Information Infrastructure (W-NII) bands. I appreciate reader Jim Lovette taking the time to point out that the actual, formal name for those bands is Unlicensed National Information Infrastructure (U-NII). Oops ... Thanks, Jim!

SPREAD SPECTRUM

I've mentioned spread spectrum (SS) technology numerous times in this column, but there isn't really room to explain SS in a column, or even why it's such a "good thing". George Gilder recently wrote an excellent article titled "Inventing the Internet Again" in the June 2, 1997 issue of *Forbes ASAP* about one of the founding fathers of the Internet, Paul Baran. For the last several years, Baran has made a series of speeches in which he put forth the idea that there is not really a "spectrum shortage," it only seems that way because current generation radio systems are "dumb", and therefore cannot tolerate much interference before they become unusable. In contrast, "smart" radios, such as those that use of spread spectrum technology, can tolerate interference. This allows more users, and faster data rates, in the same "amount of spectrum". The entire article can be found at *Forbes ASAP Online* at www.forbes.com/asap/97/0602/106.htm. When people argue that there really isn't a shortage of spectrum, I point out that there's a shortage of bandwidth in any given fiber optic cable. If the fiber optic cable is refitted with faster lasers that allow faster data rates, some additional bandwidth has just been created. Similarly, a band of frequencies that can only accommodate a

June 2, 1997

Forbes **ASAP**



Why It's So
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Inventing The Internet Again

By George Gilder

In the early 1960s, working on America's second-strike capability, Paul Baran conceived the Internet. Now he wants to save the Net itself.



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limited number of "dumb" radios, can support many more "smart" radios because the "smart radios" can make more effective use of the available spectrum. In fact, this is exactly what happened when cellular carriers introduced digital cellular phones. The digital cellular phones allowed the cellular companies to provide services to more users than possible with analog cellular phones.



Wireless LAN/Man Modem Product Directory

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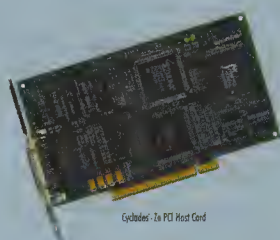
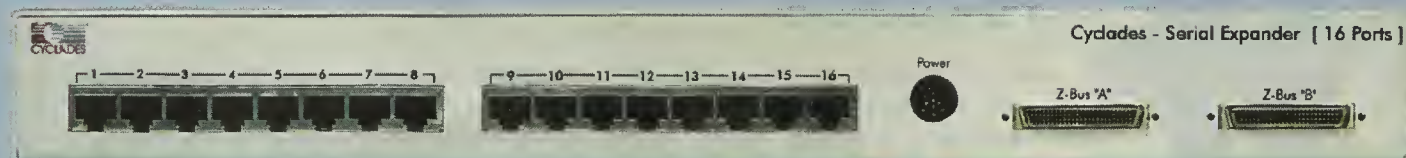
Since *Wireless Data Developments* began in April 1997, I've been asked by readers to recommend wireless network systems based on their requirements. I'm unable to provide such detailed recommendations, but I am able to enthusiastically recommend a place to do more research on wireless networking systems. Barry McLarnon, who is a fellow officer of TAPR (see the sidebar), has compiled an excellent summary of current wireless network systems. You can find Barry's wireless LAN/MAN modem product directory at <http://hydra.carleton.ca/info/wlan.html>.

Although I can't make individual, detailed recommendations, I've heard a number of good things about Digital Equipment Corporation's RoamAbout wireless LAN products. I'm told that the RoamAbout products are licensed from the NCR/Lucent WaveLAN wireless LAN technology. You can get more details on DEC's wireless networking systems at www.networks.digital.com:80/dr/wireless.

Wireless networking isn't an exact science yet — there's a lot to be gained from sharing experiences. I'm wondering if there is sufficient interest to form a special interest group on wireless networking in the Seattle area. If you might be interested in such a group, send me an note via e-mail at steve@strophpub.com. ♦

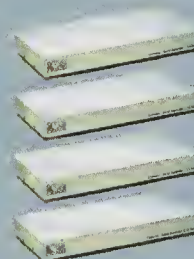


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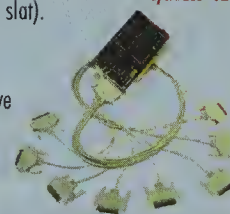
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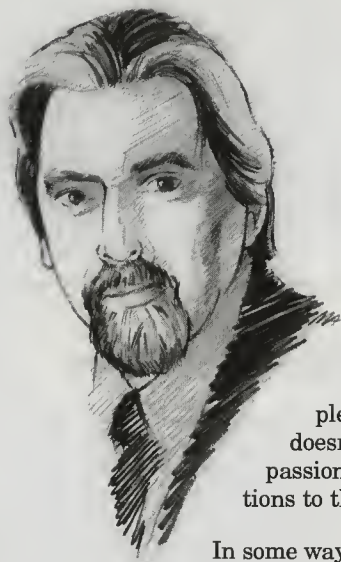
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@INTERNET by Thom Stark

IT'S A NAT URL

I'm running for City Council in El Cerrito, California, USA. The issues in the campaign are serious, urgent, complex—and sheer Sominex to anyone who doesn't live here. I do live here, so I'm pretty passionate about what I believe are the best solutions to the various problems El Cerritans face.

In some ways, the Internet is a lot like El Cerrito. As in El Cerrito, the concerns the Internet community face are serious, urgent, complex and profoundly uninteresting to those outside that community. As is also the case with El Cerrito's residents, 90 percent of the members of the Internet community live and work in blissful ignorance that most of these tough issues even exist.

From my perspective, one of the most urgent problems the Internet community faces is that IPv4, the protocol that binds us all together, is getting more than a little long in the tooth. The wizards of the Internet Engineering Task Force have managed to keep this aging protocol, limping along far beyond its natural lifetime, mostly by shoehorning added functionality into the core protocol via ingenious manipulation of router protocols and by very, very carefully using the precious few reserved bits in the IP datagram header to point to header extensions.

Today's Internet backbone routers don't support IPv6 and the lower-cost, lesser-function routers used in most connected networks definitely don't support IPv6. Until they do, anyone who wants to use IPv6 in a routed environment has to dual-stack with IPv4 and has to put up with the performance hit of tunneling IPv6 by encapsulating it within IPv4 packets.

So, it's the chicken-or-the-egg problem and the bottom line is that we won't get to take advantage of that huge address space (or any of the other cool features of IPv6) until Cisco, Bay, 3Com and their small-fry friends start building software that supports it. Luckily though, there's more than one way to flay a feline — or to build a bigger address space.

SOME OF MY LIES ARE TRUE

Classless InterDomain Routing (CIDR) was a wonderful thing. By eliminating classful addressing, it temporarily solved the problem of IP address depletion that loomed so large back in 1993. But the raging thirst the world has developed for IP addresses continues unabated and it's causing serious strain on the ability of present-day routers to cope with the growth in the size of the Internet's routing tables. Even the breathing space in the relentless depletion of IP addresses created by the adoption of CIDR won't last more than another decade, at best.

The CIDR specification was finalized in 1993's RFCs 1517-1520. In their May 1994 RFC 1631, Kjeld Egevang and Paul Francis proposed another address extension strategy they called the Network Address Translator (NAT). They proposed that what they called "stub networks" (i.e. — networks that provide no downstream connectivity services for other than their own users) use one of the three IP address blocks allocated by the Internet Assigned Numbers Authority (IANA) as private address space and, essentially, lie about it to the rest of the Internet.

IANA reserved three private address space blocks to permit enterprises that would never be connected to the Internet (or to other enterprises' networks) to use IP addresses that were only guaranteed to be unique within their own network. None of these addresses are ever assigned to Internet service providers or to other Internet-connected autonomous systems. That policy means that, since their hosts will never "see" each other, multiple enterprises can each use the same set of addresses within their private networks. It also means that, if an enterprise that is using a private address block somehow connects to the Internet without first renumbering its hosts, it can't create a conflict with any of the globally-unique addresses that have been assigned to existing Internet-connected hosts.

NAT translates these non-globally-unique, private IP addresses to and from a pool of globally-unique "public" IP addresses that are visible to the Internet.

When a host on the private address space side of the router requests a service from an Internet host, NAT assigns one of its pool of "legal" addresses to the request, modifies the packet by substituting the globally-unique address for the original source address on the private side and forwards the request to the Internet destination host. It performs the same operation in reverse for packets coming in from the Internet host that bear the destination address corresponding to the host on the router's private address side. Once the session ends, the "loaner" public address is returned to the router's pool, so that it can be reused by the next host on the private address side that requests a service from the Internet side of the router.

Of course, there are both advantages and drawbacks to this tool.

THE GOOD, THE BAD AND THE UGLY

With NAT, all IP translation happens at the application layer. Thus, NAT is unsuitable for applications such as virtual private networks (VPNs) that demand connectivity at the network layer. In the case of VPNs,

Thom Stark is President of **Stark Realities**, an Internet business consulting firm based in the San Francisco Bay Area. He also conducts seminars and tutorials about the Internet at trade shows and for business and user groups. He is the author of the serialized online science fiction novel, *A Season in Methven*, (www.starkrealities.com/Methven) and is also a semi-regular panelist on ISP-TV's "State of the Net" cybercasts. Mr. Stark's e-mail address is thom@starkrealities.com and he maintains a non-commercial web site which focuses on IP internet-working technologies and policy issues at www.starkrealities.com.

packets routed over the Internet between private-address-based stub networks must be encapsulated within "legal" packets by both border routers, adding considerable overhead, and seriously impacting performance.

By definition, NAT substitutes one IP address for another. That, in turn, changes the IP checksum. NAT must therefore calculate a new checksum and substitute it for the original in both outbound and inbound packets. Among other things, this means that NAT fails for applications that encrypt packet headers or which use the original checksum and/or IP source or destination address as a seed or other component of their encryption algorithm. It also fails for applications that incorporate source and destination IP addresses in the data portion of their packets, unless the particular NAT implementation "knows" that the application does so. For instance, all commercial NAT products "know" that FTP does this very thing.

By design, a NAT router's pool of "legal" addresses is generally a good deal smaller than the total number of hosts on the private side of its connection to the Internet. For most enterprises, this makes perfect sense, since the bulk of their network traffic is purely internal. However, for those enterprises where there is a heavy, continuous demand for access to Internet-based hosts, the fact that NAT has to perform surgery on every inbound and outbound packet can act as a real performance bottleneck.

NAT hides the addresses of hosts on the private side of the router from hosts on the public side. The "legal" address a NAT router assigns to a host on the private side persists only for the duration of a particular application session, so hosts on the public side of the NAT router cannot determine the true address of hosts on the private side.

From a security standpoint, that's a good thing. From a network management perspective, it's a drag. NAT plays merry hell with SNMP, for instance, and it greatly complicates the process of

obtaining DNS services from a public-side host. Because NAT works by substituting IP addresses and modifying checksums, it can also cause problems with ICMP-based applications, such as Traceroute.

The good news is that NAT allows the stub network almost unlimited growth within its private address space, while the amount of public address space it consumes can remain fairly small. Better still, because a NAT router's public address space is assigned by an upstream provider, its entire allocation of globally-unique addresses can usually be seamlessly aggregated into the CIDR block organization's ISP. That keeps it from consuming any extra space in the Internet's core routing tables, and that's a very good thing indeed.

THE FUTURE BELONGS TO IPV6

Among the major router vendors, Cisco's Enterprise Plus IOS 11.2.4 supports NAT — but you have to specifically request it. Neither 3Com nor Bay Networks currently supports it (at least, not as far as I can tell from 3Com's poorly-organized and badly broken web site). Bay's site, instead, talks about its commitment to IPv6. On the other hand, most major firewall vendors now incorporate NAT as an adjunct to packet filtering, logging and stateful inspection. Along with the usual UNIX suspects, such as Sun, Raptor Systems, Checkpoint and their ilk, Ukiashoft's NetRoad firewall NLM supports NAT for Novell IntraNetWare servers (a fact in which you may not be interested, but one that I guarantee will fascinate quite a few of your corporate customers).

I've met any number of true believers who insist that CIDR and NAT and a host of other stop-gap patches to the increasingly creaky IPv4 are preferable to the terra incognita of a wholly new protocol. Heck, there are a lot of SNA partisans left in the world, too. I think both groups are kidding themselves. The truth is

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that, although NAT offers a present-day solution to problems of scaling and security, in my view, it is essentially a kludge and its limitations augur strongly against its long-term viability.

From my perspective, the best long-term solution to the problems of extensibility, manageability, scalability and transparency is IPv6.

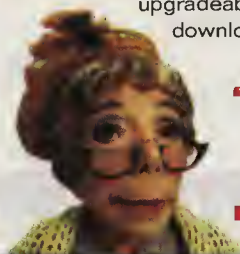
I haven't exactly made that a secret. In fact, when Evangelo Proudroumou (keeper of the PERL for Win32 FAQ) proposed a humorous eight point platform for my City Council campaign, his suggestion for plank six was "El Cerrito will change over completely to IPng by Dec 31, 1997."

Then again, according to Evan, (who knows me entirely too well for someone whom I've never actually met) plank eight should be "We must retrieve the Amulet of Yendor;" — which ought to tell you something about the value we both place on museum pieces. ♦

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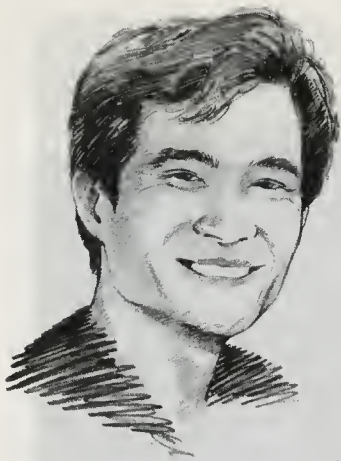
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Notes From The Underground by Wallace Wang

HOW SPAMMERS SPAM

Nobody likes to receive spam. It wastes time and clogs e-mail accounts and newsgroups with useless information. Yet many companies continue to send spam anyway. Unlike direct mail advertising, spamming is essentially free. For the cost of a single Internet account, any company or individual can reach a potential worldwide audience numbering in the millions. Even if you upset 99 percent of the people on the Internet, just reaching that one percent to sell your product can make spamming worth the minimal cost to create.

So who do you blame for the problem? The people who create spam? The Internet providers who allow spamming? Or how about a third party that doesn't get as much publicity (or blame): the publishers of bulk e-mailing software.

Just as bulk mailers never lick the stamps and envelopes themselves, so do few companies type multiple e-mail messages on their own. Instead, many companies buy bulk e-mailing software that automates the process of spamming. Just click a button and you too can scatter thousands of e-mail messages across the Internet. Bulk e-mailing software provides two crucial features for spammers:

- Automatically retrieves e-mail addresses from CompuServe, Prodigy, or America Online member directories and Internet newsgroups.
- Masks your true Internet e-mail address to prevent reprisals.

RETRIEVING E-MAIL ADDRESSES

Before a bulk e-mailing program can start spamming, it needs a list of e-mail addresses. While you can buy lists of e-mail addresses, these lists are not always accurate or up to date. Rather than rely on a list that somebody else has created, a bulk e-mailing program can help you create your own e-mail address list.

The two most common sources for e-mail addresses come from online services, such as CompuServe or America Online, and Internet newsgroups. Whenever you write a message in a CompuServe forum or Internet newsgroup, your e-mail address appears so someone can write back to you. A bulk e-mailing program simply copies entire messages off an online service forum or Internet newsgroup, strips away the text, and retains only the return e-mail address to save in a list. As a result, updated e-mail lists are as near as your favorite online service or Internet news-

group, and there's not a thing anyone can do to stop someone from copying multiple e-mail addresses.

Even better (from the bulk e-mailer's point of view), online service forums and Internet newsgroups focus on specific topics such as health and fitness, computer programming, or sports. So if you're selling vitamins, just visit any CompuServe or America Online forum, or Internet newsgroup related to health and fitness, and Bingo! You've got a list of prospective customers' e-mail addresses.

MASKING YOUR IDENTITY

A spammer will often incur the wrath of several hundred (or several million) irate victims who often respond with angry messages or even e-mail bombing attacks, which sends multiple messages to the spammer's e-mail address, thereby clogging the spammer's e-mail account and rendering it useless.

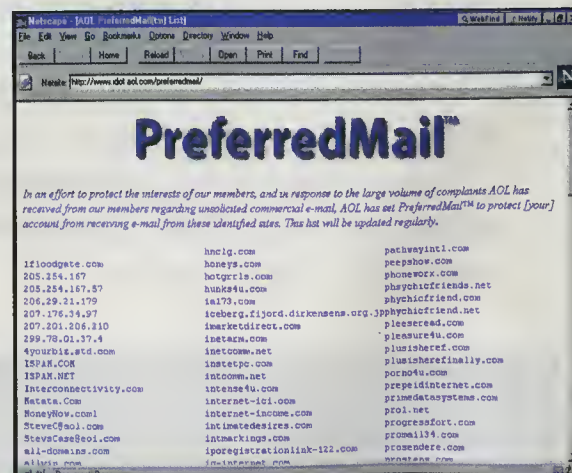
To counter these counter-attacks, some spammers simply create a temporary Internet account, send out their spam, and then cancel the Internet account before anyone can attack them. Unfortunately, this means constantly creating and canceling Internet accounts.

Rather than open and close multiple Internet accounts, many bulk e-mailing programs simply strip out the sender's e-mail address. That way, there is no return e-mail address to complain or retaliate against, (theoretically) protecting the spammer.

One bulk e-mailing program, E-Mail Magnet, even advertises its MX Cloaking technology "gives you

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When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at 70334.3672 @compuserve.com, bothecat@aol.com, bo_the_cat@msn.com, or bothecat@prodigy.net



maximum anonymity so you can send anonymous E-mail without fear of reprisals!"

Since opening and shutting multiple Internet accounts can get troublesome, many spammers simply sign up with an ISP that allows spamming. To find a list of ISPs that allow bulk e-mailing, just visit America Online's web site at www.idot.aol.com/preferredmail. This site lists all ISPs that America Online refuses to accept e-mail from because of past instances of spamming from these sites. So while using an ISP in this list won't give you access to spamming America Online members, it will give you a list of ISPs that have allowed spamming in the past.

CHOOSING A BULK E-MAILING PROGRAM

You probably won't find a bulk e-mailing program sold at your local computer store, but they're still plentiful nonetheless. Generally, bulk e-mailing publishers target their programs toward businesses that are new to the Internet. As a result, many spammers may simply be unaware of the general consensus against spamming and naively believe that bulk e-mailing is no different from ordinary mass mailing, except e-mailing is a lot cheaper and hence potentially more profitable.

Floodgate (www.floodgate.com) promises businesses that they can send up to 100,000 letters a day and devotes just two paragraphs to addressing the question of spamming:

As you may know the practice of sending unsolicited e-mail is usually frowned upon, and most service providers are against it. But, like jaywalking, there is no enforcement. Sometimes, when a lot of people complain, I get a warning letter. And that's about it.

About 1 in 200 will write back and tell me, "take me off your list", which I can do, thanks to Floodgate's "remove list" feature. Many people reply back thanking me for sending them my informative letter. That's always nice. Most people though, just reply and say, send more info. In this way it usually takes me two or three letters to close a sale.

Extractor Pro (www.extractor.com) addresses the question of spamming more honestly:

"Spamming" can be explained as "harassing" — for us this could mean overwhelming recipients with untargeted, harassing messages that do not contain any pertinent info. to unwanting recipients.

We do not recommend spamming. Nor do we sanction its activity. Unfortunately, we can not stop it. And, one could use our program to do it.

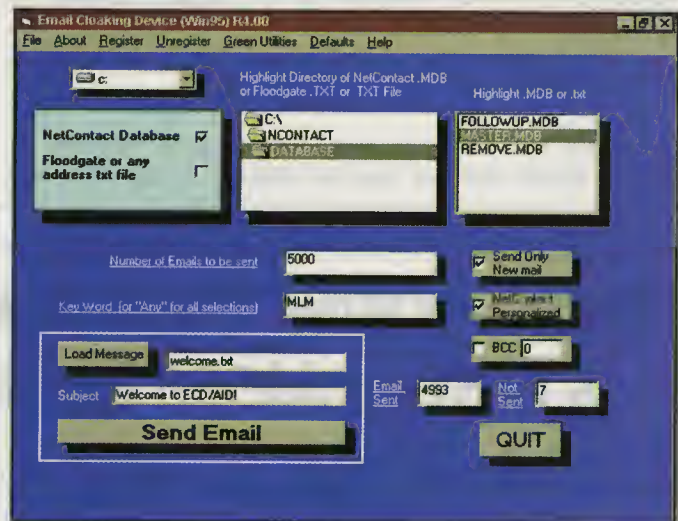
If you intend on sending bulk email to those who you know who do not want to receive it, I urge you: DO NOT.

However, If you intend on becoming a responsible member of the bulk E-mail community, Extractor Pro is the program to use. It automatically removes from your mailing lists, those who have already requested to be removed — this is called a "remove list". You will want to use Extractor Pro's automatic "remove filter" function. This automatically finds all "remove requests" to you, and does not allow any mailing to them. (With your order, you receive 5,000 FREE Remove list names, to start you off!)

Of course, you could also use this collection of 5,000 Remove list names to spam anyway. Amusingly, Extractor Pro even goes so far as to address the question of spamming America Online members:

AOL vs. Cyberpromo resulted in allowing AOL to CHOOSE to block unsolicited Bulk E-mail FROM Cyberpromo to its subscribers. Unfortunately, AOL is allowed to try to censor what its members read. In fact, they take this censorship to extremes, by restricting the use of certain language. This has NO IMPACT on the bulk e-mail industry as a whole. If you are a smart, considerate member of the bulk e-mail community, you should have no problem bulk e-mailing to AOL members. — We offer some great tips on how best to do this.

In this case, it's hard to get angry at a bulk e-mailing program like Extractor Pro when they provide tips for spamming America Online. Deciding against spamming or against America Online is like deciding who should get the living day-lights beaten out of them for being an embarrassment to the human race, Tonya Harding or Mike Tyson. (In case any politically correct readers are wondering, the "Tonya Harding" reference was added to avoid appearing racist by picking on Mike Tyson, or appearing sexist by ignoring females.)



E-Mail Magnet (www.emailmagnet.com) flippantly disregards the question of spamming altogether by asking the question, "Is bulk e-mail against Netiquette"? and then answering it with the following:

No. Netiquette is NOT against bulk E-mail. Most people with computers are in favor of receiving Email telling them about new products and services. Our software automatically updates and maintains a DO NOT MAIL LIST so you do not send E-mail to people who do not want to receive it."

Of course, the only way to create and update a DO NOT MAIL LIST is by upsetting people with spam in the first place. Naturally, your DO NOT MAIL LIST will be different from some other person using E-Mail Magnet, which means the same people can get spammed over and over again by others using similar bulk e-mailing programs.

Bulk e-mailing programs are expensive, ranging in price from \$300 to \$500 a copy. Besides selling their programs, bulk e-mailing publishers also sell their programs through distribu-

tors, similar to multi-level marketing methods. As a result, many individuals are not only tricked into buying their programs, but also conned into advertising these bulk e-mailing programs for the publishers.

FIGHTING BACK WITH SPAMHATER OR SPAMSHOT

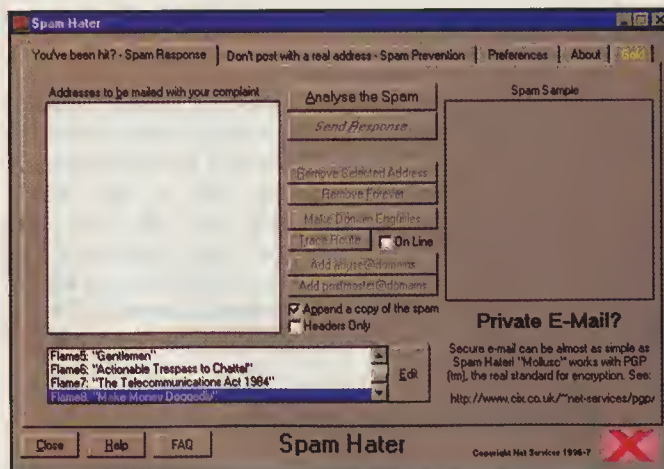
If you're tired of spam, visit www.compuling.co.uk/~net-services/spam and download two free programs, SpamShot or SpamHater.

If you just want to avoid spam, download and run SpamShot before connecting to the Internet. When spam arrives, SpamShot automatically routes it to the trash folder or deletes it altogether. That way, you never have to worry about the inconvenience of spam in your e-mail account again. (Of course, you still may have to wade through spam in a Usenet newsgroup.)

(For a similar e-mail filtering program, download Spam Attack Pro from <http://members.tripod.com/SpamCanners/programs.htm>.

To attack spammers directly, download and run SpamHater. SpamHater analyzes spam to find the Internet address of the spammer and the Internet provider the spammer may be using. Then you can use SpamHater to write a reply, legal threat, or insult.

Since spam will likely be around as long as we have an Internet, decide how you want to respond to spammers and



choose your weapon accordingly. To avoid the spam wars altogether, use a filtering program like SpamShot or Spam Attack Pro. To fight back against spammers, use SpamHater.

Or if you really want to get at the heart of the problem, send your hate mail (spam?) to the bulk e-mailing software publishers themselves. While this may not stop spamming, at least now you'll have a third target to blame for the creation of spam in the first place. ♦

ISPs: LOOKING FOR A REMOTE ACCESS SERVER THAT IS FASTER, MORE RELIABLE, & LESS EXPENSIVE?

Look no further! Computone's IntelliServer **PowerRack** is exactly that! In comparison to Livingston's Portmaster, the PowerRack has a per port capacity of **921.6Kbps** (Portmaster -- 115.2Kbps), the PowerRack can support **16-64 PPP lines** (Portmaster -- 10-30), the PowerRack's average price per port is \$60 for 64 ports (Portmaster -- \$97 for 30 ports), and the PowerRack has a **5-year warranty** (Portmaster -- 1 year), **FREE** lifetime technical support and software upgrades, and a 30-Day evaluation option.

The PowerRack also has the standard feature list: dial-in/dial-out access, a powerful RISC CPU, Ethernet connectors, ISDN capability, PPP, SLIP, CSLIP, *bootp*, *rlogin*, *telnet*, reverse *telnet*, PAP/CHAP authentication, RADIUS II, RIP II, SNMP MIB II, subnet routing, IPCP DNS exts. for Windows 95, and IP filtering.

PowerRack user and Internet Service Provider Michael Behrens, of InterNet Kingston (mbehrens@kingston.net), commented, "The PowerRack is an attractive product, both in its ability to do the job well and to do the job... cost effectively. Port for port costs are significantly lower than the Livingston Portmaster. The product lives up to its name... performance under load is exceptional! The PowerRack also offers a significant feature for feature comparison against the available competition (i.e. Livingston Portmaster). And, technical support was extremely knowledgeable and responsive."



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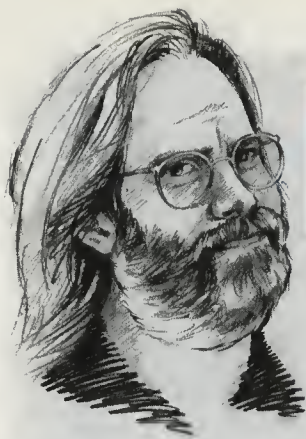
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** Boardwatch Magazine, July 1997*



Innovation • Xceptional Service • Customer Driven



Java Jitters

by Doug Shaker

AN UPGRADE TEACHES DOUG A THING OR TWO ABOUT APPLES AND WINDOWS

Last month, I said some nasty things about Apple and their mushy support of Java. Since then I've discovered why Apple isn't dead yet and may even survive.

I was trying to cut down on the number of computers in the house. The kids had a Mac LC III — one of the old 68000-based Macs — and it was starting to show its age. Its disk drive was only 80 MB and the CD-ROM was just a single speed. It ran the kids' games well enough, but I had an extra 486 in my office. I thought the world is going to Windows 95, why not juice up the 486 a little, put Win95 on it, and give it to the kids as a replacement for the Mac?

I pulled the 486 out of my office, took it into my garage and started to reconfigure it. It used to be a cheap web server and, before that, a bulletin board system. I pulled out the multi-port serial card and put in a sound card. No problems with the hardware, it booted right away.

The software was more difficult. I had been running Linux on it for the web server. Then, when I got a contracting job that required OS/2, I had converted one of the partitions of the disk to OS/2. To make all this manageable, I had replaced the usual DOS boot software with a Linux-knowledgeable boot utility called LILO.

Now the problem was converting this hunk of iron to Windows 95. It should have been trivial. It should have been easy, but I bought most of my operating system software as upgrades. You know what that means — it looks for the previous version before it will install. I looked through my software, trying to find out how far back I would have to go to start the installs.

Maybe you have all this stuff organized and alphabetized. I have a milk crate filled with floppies. The floppies have rubber bands around them to keep disks one through 12 together, but the rubber bands rot after a year or two and turn into something resembling a dead, dried earthworm stuck to the sidewalk. As I looked, the rubber band corpses fell off the floppies down into the milk crate. Boy, there is a lot of junk in there — clip-art from the early 80s, characters-based versions of Microsoft Works, piles of free AOL disks, old C++ compilers, and system utilities that I bought to get me out of one jam or another and never used again.

I pulled out all the Intel OS stuff: Windows 95 — an upgrade. Windows for Workgroups — an upgrade. Windows 3.1 — the full product, but it requires DOS. DOS 6.22 — an upgrade. DOS 6.2 — an upgrade. DOS 5.0 — an upgrade. DOS 4.1 — the full product. So I had to start with DOS 4.1 and work my way up. Fine. A little primitive, but fine.

I put the DOS disk in the system and booted. The system booted off the floppy just fine. I started the install script and it warned me that it would need an empty floppy. Heaven knows, I have plenty of those. How about this nifty AOL disk? My nasty little computer ground away at it for a few minutes, then informed me that the disk was faulty and could not be formatted. How about this old OS/2-formatted sneaker-net disk? No, it didn't like that either. Let's try a brand new disk. Nope, it didn't like that, either. How about another new one, preformatted, this time. Nope. Is my floppy drive dead? Then how come it booted off the floppy? I pulled out the DOS disk and took a look at it. No HD markings on it, only one notch in the 3.5" casing — it was a 800K floppy! The DOS install program must not know how to deal a 1.4MB floppy.

Asking Microsoft to patch their 4.1 DOS install program wasn't much of an option. What else could I boot from? My main box in my office runs NT — I couldn't use the emergency boot floppy from there. My laptop runs Windows 3.1 and DOS, so I pulled it out. I formatted a bootable disk, put FDISK and FORMAT on it and tried that out in the target system. It booted. Let's try getting the system to boot off the hard disk — maybe that is enough to get the upgrade floppies going. Let's repartition the disk, and format it as a DOS system disk.

I tried repartitioning the disk with the FDISK on the floppy — another treat waiting to happen. I may be wrong, but as far as I can tell, DOS versions of FDISK won't let you allocate a new primary partition unless the old primary partition is deleted, and they won't let you delete the old primary partition if it isn't a DOS partition. If you have a disk with a primary partition that is non-DOS, then you can't delete it and you can't replace it. I worked that one over for half an hour, trying various combinations. Nope, nope, nope. I just couldn't get anywhere with the DOS version of FDISK. Finally, I put in a Linux boot floppy, booted under Linux, and repartitioned the hard disk under Linux. Then I booted under DOS, allocated some new partitions, and formatted a bootable partition.

But I still had LILO in the boot sector. This meant that every time the system came up, it asked what partition should be used to boot. I didn't want to have to tell my kids how to navigate a boot utility. They're savvy, but there is a limit.

I looked through the Linux documentation for half an hour, trying to find out how to get rid of LILO. There was plenty of documentation on how to install it. There was some stuff on how to delete it, but it assumed that you were still running Linux and that you stored a copy of the old boot software in a Linux file and could use a Linux utility to put it back. Even if I had saved it

Doug Shaker is a freelance technical writer in California.

He has one wife, two children, three pets, and five computers. The computers are obviously out of hand. He can be reached via e-mail at <mailto:doug@theshakers.org>. Yes, that is a personal Internet domain. We told you the computers were getting out of hand.

in the first place — unlikely — I deleted it when I repartitioned and reformatted. After about 45 minutes, I found a reference to a switch in the DOS format command that also reinstalled the DOS boot sector. I got out my laptop boot floppy and reformatted the disk one more time.

OK, now it should be easy. Nope, nope, nope. I put in the DOS 6.22 upgrade, and it wouldn't proceed. It wanted to see more of the old OS before it would believe that it was OK for it to install. Crap. How was I going to get over that hurdle? Maybe I could copy some files from somewhere to make things look OK to the upgrade disk. I took a look at the directory on the 6.2 upgrade floppies. The file extensions all had underline characters in them, so I assume that meant that the files were compressed. No good. I took a look at the 4.1 DOS floppies. They had regular files. I copied the files from the DOS floppies to my system and put them in a DOS directory. Then I went back to the 6.22 upgrade. Then it complained about my system and my DOS programs being different versions. ARRGGH! What do they want from me, blood?

Then I kind of went nuts. I copied system and command files around with wild abandon. Copy the boot version down into the DOS directory! Try again! Copy the DOS version up! Try again! Copy everything to the root directory! I tried a lot of stuff. I was pissed. Finally, something worked, but I can't tell you what. The 6.22 upgrade installed.

After that, it was just a matter of pumping floppies. The umpteen floppies of the Windows 3.1 install, then the umpteen-plus-four Windows for Workgroups 3.11 upgrade, then the Windows 95 upgrade. It took a hour or two and the only hitch was that the Windows for Workgroups software wouldn't boot until I put terminators on the thinnest connector coming off the Ethernet card. As long as the connector was open, it hung, looking for information to come off the net. That took me a while to figure out, but eventually I did.

Finally, I got my silicon friend upgraded to Windows 95 and working. I started to install the kids' games. In a fit of enthusiasm, I went to the store and bought a few new ones with that Windows 95 logo on the box.

And you know what? None of them worked worth sh**. All of this crashed the system. I was lucky if the system would stay up for 15 minutes. Usually, I would get the kids started with a game, watch for two minutes, leave to do something else, then hear "Dad! It's not working." I would return to find a frozen system. My daughter played with a typing tutor for 30 minutes and, in that 30 minutes, had

to reboot five times. She gave up, saying "This stinks. The Macintosh is better." My son is more persistent. He simply learned the three-fingered salute — Control-Alt-Delete — and kept on playing. His main frustration was that his high scores weren't being retained across reboots.

I called a couple of the game manufacturers — excuse me, educational software development firms — and got exactly nowhere. One support department basically said, "Yup, it doesn't work very well on Windows 95. Have you tried it in standard VGA mode with 256 colors?" Another sold me a CD software update for \$20 that turned out to be exactly the same as the buggy software I was already running. Everything crashed or froze the machine.

I thought it over and I took a look at the old Mac LC III packed up and ready to donate to my kids' school. If I bought a faster CD-ROM drive, a new disk drive and another 16 MB of memory, it would be more or less up to date and would run better than the Windows 95 box. I figured the upgrade cost at about \$750. For another \$500, I could get a new, PowerPC Mac with tons of installed software. I went to the local computer store and bought a Performa on sale. I brought it home and had it set up in less than half an hour. The games just worked. No putting around — they just worked.

I have been working with computers, putting them together and taking them apart for about 20 years. It was just one box and one guy, but I couldn't get a vanilla Windows 95 machine to work with educational games. The elementary school in my school district is staffed, almost uniformly, by teachers who have no idea how to put together, maintain, or upgrade a computer. If you put Windows 95 machines in their classrooms, the machines will be used exactly as long as someone else does all the setup work, and the programs on them are made to work reliably. As far as I can tell, that means a Windows 95 machine will be used for about two hours, then turned off and carted away.

That is why Apple isn't dead yet. A Mac will work reliably in the classroom and, until a Windows 95 box can work as well, the Macs won't be replaced and the schools will continue to buy Macs. When the Windows boxes work as reliably with educational software — probably two or three years from now — then Apple may die. Until then, they still have a business and can hope to build back their market share. As far as I am concerned, more power to them. ♦



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SERIAL KILLER

COULD BE AFTER YOUR DOMAIN NAME

By
Bill McCarthy



Pick any common English word. Hit the web, register it with InterNic, pay the fees and open up an Internet storefront. Then sit back and wait for those sales leads to roll in. But along with those leads, you might find yourself in a time-consuming, money-sucking civil suit brought by a battery of corporate attorneys, each making hundreds of dollars for every hour they spend finding ways to challenge your domain name.

That's what happened to Eric Robison. He paid all the fees, did all the paperwork and was first in line to register the name of his business in June 1994. Robison is founder, president and everything else at Clue Computing of Longmont, Colorado. A few part-timers fill in the gaps, but Robison is the sole full-timer and he relies heavily on his web site (www.clue.com) for marketing, e-mail for communication, and the Internet as a business resource. Robison faces a battery of lawyers hired by Hasbro Inc., the giant toy maker.

"If you have a web site you can be dragged into court anywhere in the world," said Philip L. Dubois, Robison's attorney. The Clue Computing web site, offering network and UNIX consulting, "isn't anything like a board game." But Hasbro, whose attorney, Kenneth Wilson of Palo Alto, California, did not return phone calls in time for this story, has plans for its trademarked games and believes that only a second level domain name will suffice.

Advertising Age reported on January 15, 1996 that Hasbro Interactive successfully debuted a Monopoly CD ROM that sold 100,000 copies, and created a companion web site. More Hasbro games, including Battleship, Risk, Scrabble, and, of course, Clue, have been issued or planned on ROMs and on the Web. *Advertising Age* reported Hasbro "believes that interactive and online gaming will be the biggest revenue growth

area for games." Not only does the potential income provide incentive, but the giant toy maker has had success in an Internet court case. In February 1996, Hasbro sued Internet Entertainment Group (IEG) for placing sexually explicit material including strip shows and fantasy booths on the Internet under domain name Hasbro claimed violated its trademarked *Candy Land*. IEG agreed to change the domain name to adultplayground.com.

The Internet is full of David and Goliath stories, and this is not a new problem. Several companies have been dragged into court over Internet domain names. There is, however, a sense of urgency over the DNS issue because the system for allocating domain names will likely change next year. But at this point, given the acrimonious debate, it's unlikely that the problems illustrated by Clue Computing's plight will change. It is a problem where the simple rules of first-come, first-served are being bound in the complexities of trademark statutes from around the globe. But it is also a simple power struggle for the soul of Internet. It is the little guy against the big guy with a power elite pulling the strings in the sky boxes that ring the arena. Make no mistake, the DNS debate is about money and who will control the anarchistic empire we call the Internet.

The Internet historically has been loosely administered by a number of government agencies involved in creating its infrastructure, initially the Department of Defense's Advanced Research Projects Agency (ARPA) and, more recently, the NSF. No organization, including the NSF, has formal authority over all of the Internet, however. It operates on a loose consensus with underlying values that are a strange amalgam derived from Cold War institutions like ARPA and the National Science Foundation, baby boomers who turned to silicon chips when the 1960s counter culture collapsed, and the exuberance and commercialism of Gen Xers.

NETWORK SOLUTIONS DRAWS FIRE

But on the Internet many blame another Goliath, Network Solutions Inc. (NSI), and what many say is a draconian and unnecessary domain name dispute policy established in July 1995. NSI is the exclusive registrar, through InterNIC, of second level domain names in the United States within the .com, .org, .net, .edu and .gov top-level domains (TLDs). It is a booming business. The company is also in the business of developing and maintaining intranets.



While the company is making some money, it has good reason to frequently glance over its shoulder. The National Science Foundation has said it will not renew its exclusive agreement with Network Solutions when the contract expires in March 1998. A group of Internet organizations and companies has

proposed a new plan for assigning addresses through at least 28 competing registrars, but that plan may never become reality. The federal government has established an interagency task force to study the possibilities, and the Commerce Department has collected comments on the issue.

NSI has battled to keep up with escalating demand for Internet addresses, 26 lawsuits arising from alleged trademark infringements in address names, difficulty collecting fees from some Internet users, and bad PR from the broadcast of faulty router tables in July. Now it is trying to raise **\$35 million** to expand through an initial public stock offering on NASDAQ under the

symbol NETSOL, but it may have to battle the government that put it in the midst of the fray. The company, set up by the National Science Foundation with a monopoly on providing Internet domain names in the United States, revealed that the U.S. Department of Justice demanded documents on June 27 as part of an investigation into allegations of anti-competitive practices in the Internet address registration industry. The DOJ is attempting to "determine whether there is, has been, or may be a violation of antitrust laws under the Sherman Act relating to Internet registration products and services." (The SEC filing for NSI's IPO is available at <ftp://www.sec.gov/edgar/data/1030341/0000950133-97-002418.txt>.) Investigators are seeking documents and information from Network Solutions' parent company, Science Applications International Corp., as well.

Herndon, Virginia-based Network Solutions said it knows nothing of the scope of the investigation. The government investigation follows a private lawsuit filed against the company in March alleging violations of the Sherman Antitrust Act. On March 20, New York-based PG Media, Inc., filed a lawsuit against the NSI in a New York federal court alleging that the company restricted access to the Internet by not adding top level domains (TLDs) in violation of the Sherman Act. Network Solutions answered the complaint, and the case is pending. But the IPO papers hint that the company feels burned by the government because it recently received written direction from the NSF not to take any action to create additional TLDs or to add any new TLDs to the Internet root servers until further guidance is provided by the NSF.

New TLDs may not solve the problem, however. Businesses and individuals worldwide are flocking to the .com TLD as the money-making address on the Web. Registrations in the .com TLD increased from about 217,000 on March 31, 1996 to about 721,000 at March 31, 1997, representing 88 percent of NSI's total net registrations on March 31, 1997. And the company realizes that with more than 10 million businesses and more than 750,000 active trademarks and service marks in the United States alone, the potential for continued growth of domain name registrations by commercial entities and services related to those registrations is the mother lode.

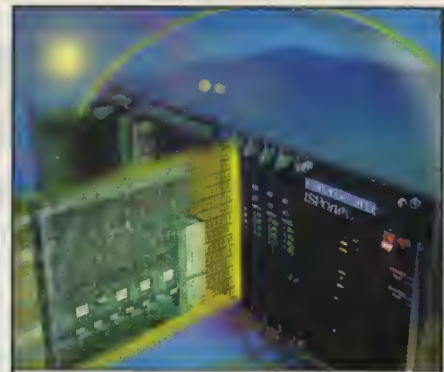
In its IPO papers, NSI lists competitive advantages in the domain name regis-

tration business. Topping that list is "brand recognition of the .com TLD." The company realizes its future success is "highly dependent upon the continued increase in domain name registrations.. ." A large part of its marketing plan, according to the IPO filing, is to continue to increase the brand recognition of the .com TLD worldwide. NSI hopes to "maintain its current position both as a registrar of domain names and as the leading registrar of domain names within the .com TLD." In other words, Network Solutions hints in its IPO that the .com TLD is a branded name, and that the company is responsible for creating the demand. Therefore no matter what steps are taken to bring competition to DNS registration, the National Science Foundation should award NSI exclusive rights to the .com TLD.



ELECTRONIC PICKET

That is a problem for those who want to see real competition in the domain name registration business. Eugene E. Kashpureff is one of those. Kashpureff, who is the founder of Alter.NIC, offers alternative domain names and believes the .com, .net, .gov, .edu and .org are in the public domain. And he nearly went to jail for it. During the weekends of July 10 through the 14 and July 21 through the 23, those who tried to access www.internic.net and www.netsol.com respectively arrived at www.AlterNIC.net. There, Internauts found a note of protest and a button for immediate transfer to internic.net or netsol.com. NSI sought a restraining order against Kashpureff and threatened him with the FBI. But after a few tense days and negotiations, Kashpureff sent a letter of apology to journalists,



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Our apology to the InterNIC.

posted it to the NewDom Usenet mailing list, and published it on the AlterNic web site.

"The Internet provides a great free and open space. I want to be sure that it stays that way. My actions hindered others' freedom to use and enjoy the Internet. For this I am deeply and sincerely sorry," Kashpureff wrote. "I will not engage in these or similar actions in the future. I am cooperating with Network Solutions to try and make sure that my actions cannot be duplicated by others." Kashpureff said that the apology is part of a settlement with Network Solutions, but he was unable to comment further until the settlement is final.

But NSI may be making some compromises in that area as well. CEO Gabe Battista said at a Forum on Internet Domain Names in Washington, DC in late July that Network Solutions would consider opening the registration of top-level domains, .com, .org and .net, to competition.

RESOLVING DISPUTES OR CREATING THEM?

Most are unwilling to go as far as Kashpureff to protest the NSI monopoly, however, and most of NSI's troubles stem from the trademark issue and the dispute policy. As of June 30, Network Solutions reported about 2,500 written objections to the registration and use of domain names. About 1,200 involved the company's domain name dispute policy. As of June 30, the company had been named as a defendant in 26 lawsuits, and has been dismissed as a party from 21 of the 26 with no damages awarded. The lawsuits have generally involved domain name disputes between trademark owners and domain name holders. NSI says the domain name dispute policy seeks to take a neutral position regarding these competing claims and is designed to address claims that a domain name registered by the company infringes a third party's federal trade-

mark. NSI says it is drawn into the disputes, in part, because trademark owners say that NSI is legally required to terminate names granted to alleged trademark thieves, since it allowed their use in the registration. NSI also says it is being pressured by trademark owners to monitor future domain name registrations and reject registrations of domain names that are identical or similar to federally registered trademarks. Meanwhile, the holders of disputed domain name registrations question the company's right to suspend domain names without court orders.

But attorney Carl Oppedahl, of Oppedahl & Larson a law firm specializing in patent, copyright, trademark, trade secret, and other intellectual property services, writes that the policy is unnecessary and creates more problems than it solves. "Someone whose conduct violates trademark rights will answer for it in court, whether that conduct has to do with a toothpaste package, the text of a web site, a fourth-level domain name (e.g. *exxon.oil.com.us*), or a second-level domain name." Oppedahl says NSI's "flawed policy" has focused inordinate attention on second-level domains while there are many other ways to infringe on trademarks. "NSI's policy has wrongly prompted trademark owners everywhere to believe (or to pretend to believe) that mere text identity between a trademark and a domain name gives rise to the power to cut off and take away the domain name." The courts are chipping away at the policy, Oppedahl says, but "the harms caused by NSI's policy will take a long time to be undone."

ACRONYM MANIA

In February, an international ad hoc committee (known as the IAHC), selected by certain entities involved in the Internet and intellectual property fields, issued its recommendation designed to increase competition in domain name registration. It proposed the creation of

additional registries, additional TLDs and the possible sharing of new and existing TLDs. In April 1997, the IAHC issued a memorandum of understanding (known in the debate as the MOU) seeking support for its recommendations. This MOU has been signed by a number of organizations in the Internet community, but the significance of the signatories is widely debated. If you are having trouble keeping up with the acronyms, get ready for more. The IAHC changed to the interim Policy Oversight Committee (iPOC), which is overseeing CORE, the Council of Registries, an open domain name registration system what would add seven new TLDs by an unlimited number of registries.

In another development, NSF approved a plan in July by which a new nonprofit organization to be run by Internet service companies will take over the assignment of Internet protocol numbers, as proposed by NSI. American Registry for Internet Numbers (ARIN) does not affect Network Solutions' job as assigning domain names. ARIN will hand out IP numbers in blocks to ISPs and corporations but NSI still connects the numbers to names registered with NSI and is exclusive provider of those routing tables to the key servers on the Internet.

One acronym seems to be missing from much of the debate over domain names, however: ISPs. No group is as intimately involved in this as Internet service providers. They are not only customers with a huge stake in DNS allocation but have a responsibility to their customers to see that the outcome of the DNS assignment debate is a fair and democratic. ISPs could be held responsible for the failure to prevent the distribution of material that infringes on others' copyrights, intellectual property or for allowing trademark infringement. The future interpretation by the courts of the obligation of domain name registration providers to prevent trademark infringement and other legal issues is uncertain. Yet ISPs seem quiet.

None of this may help Robison while he watches his child's college fund evaporate in defense of his company. But ISPs or anyone with a small Internet business or vested interest in the DNS system should pay attention to his plight and the maneuvers that they may face. Clue Computing has had some victories, although at great cost. The company received an injunction from a Colorado District Court in June preventing NSI from yanking its domain name until the Hasbro suit is resolved. Robison said a Boston attorney hired to represent him

against Hasbro in U.S. District Court in Boston felt encouraged by an August 6 hearing. The judge did not dismiss Hasbro's claim, however, and it may take years to grind out a final decision. That appears to be fine with Hasbro's hourly attorneys and perhaps NSI, whom Robison and Dubois see as siding with Hasbro.

LEGAL MANEUVERS

On the eve of the hearing for a preliminary injunction, NSI filed an interpleader action in a federal court in Colorado. In the interpleader, NSI essentially says it is the innocent holder of the property in dispute. Despite NSI's request that a federal judge force the state court to drop the case in favor of the newly-filed federal action, the state judge enjoined NSI from cutting off the clue.com domain. Clue Computing, Inc., then agreed to delay the state proceedings until the interpleader action was resolved to avoid having to fight battles on the federal and state level at the same time with its limited resources.

NSI made Hasbro a party to the interpleader action, and Hasbro retained Holland & Hart, LLP, one of the largest law firms in the Rocky Mountain region. Holland & Hart has more than 200 attorneys with offices in the biggest cities and wealthiest enclaves in the mountain states as well as Washington, DC. Hasbro could have litigated all the issues during the interpleader action, including the allegations of trademark infringement and dilution, but chose instead to move to dismiss the interpleader action. (Clue Computing, Inc., had also moved to dismiss, but on different grounds.) Hasbro's motion to dismiss was signed by a partner in the Holland & Hart firm. But the Goliath chose to bring in another huge law firm, Wilson, Sonsini, Goodrich & Rosati, a firm of more than 300 attorneys, based in Palo Alto, California.

Hasbro prevailed in its motion to dismiss the interpleader action. But Hasbro was not successful and argued that the federal court could not proceed with interpleader determination until the domain was cut off. That would mean case closed for Clue Computing; Robison would be out his web page. The federal judge in Denver deferred to the state court's injunction, dismissing the interpleader action. But U.S. District Judge Wiley Y. Daniel said in dismissing the interpleader that the dispute is not merely between Clue Computing and Hasbro, "rather the dispute implicates the duties flowing from the agreement

between" Clue Computing and Network Solutions. Daniel wrote: "Therefore, I will not allow Network to use an interpleader action to invoke the equitable jurisdiction of this Court in order to escape adjudication of its contractual duties, and possible liability, in the state court action."

On January 10, 1997, NSI answered the state-court complaint. Given the federal judge's decision in Denver, it is probably no coincidence that on that same date, Hasbro filed its lawsuit in Boston. Not only does Robison feel two giant companies have teamed against him, but he objects to their tactics, which delay and run up expenses. "Hasbro obviously knew that my company had counsel but made no effort to communicate with him, even about service. Instead, Hasbro 'served' me with the complaint by mailing a copy to an address in Colorado and by serving the Secretary of the Commonwealth of Massachusetts," Robison said in court documents.

Dubois said the only reason for Hasbro, based in Pawtucket, Rhode Island, to drag Robison into court in Boston is to increase expenses. But Hasbro's Parker Brother's Division, which makes the board game Clue, is based in Beverly, Massachusetts. Its suit claims that since Clue computing does business "anywhere in the world" that the Clue Computing is doing harm in that state, a state Robison said he has never worked in.

Robison said he has offered to sell the name to Clue and to negotiate a settlement, but they do not return his phone calls. It doesn't take a super sleuth to figure out what's happening here. Robison bought an existing company in 1994, and registered the domain name before anyone else. He did not register the domain name then try to hold it for ransom from a large company. He played by the rules. Someone is attempting to murder small business on the Internet and it isn't Colonel Mustard in the ballroom with a candlestick. It is a convoluted system, a game in which big swallows little as it seeks to dominate and control. It's a system where existing trademark laws are used like a candlestick or lead pipe to bludgeon those with the smaller pile of money. It's a game where the usual suspects, huge corporations and their exorbitantly priced lawyers, are guaranteed to be the only winners, unless a fair and democratic system can be implemented for assigning Internet domain names. ISPs and small businesses beware: There may be a serial killer on the Net. ♦



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Doug Mohny was employee #10 at DIGEX. He has learned, and forgotten, a lot about help desk support, competitive intelligence, sales and marketing, leased-line service ordering, telco service, and public relations. He makes no pretenses at understanding anything more about the technical side of IP other than being able to get a PPP account working.

His writings have been published in *LA View*, *Washington Technology* and the *Washington Post*.

STREAMING MEDIA by Doug Mohny

AUDIO — WE DON'T NEED NO STINKIN' FM TRANSMITTERS

Have a hankering to listen to the radio station back in your home town, even though you've moved a couple thousand miles out of receiver range? Maybe tune in for a front-row seat at the latest Senate encryption hearings? Or just catch up on the latest ball games, the one that you can't get through your 120 channel cable service? Access is easy as pointing your web browser at a site, as long as you've got a multimedia PC and a 28.8 Kbps, or faster, modem.

Streaming media (i.e. packets are continually tossed down the pipe from server to clients) audio broadcasting over the Net is a "solved problem" in terms of both procedures and bulletproof software. There's one market dominating standard, Progressive Network's RealAudio, and people have been conducting live, real-time broadcasts using RealAudio for over a year.

You can't make the same statement with live, real-time Internet broadcast video software packages; there are (at last count) over a half-dozen different programs competing for king of the hill in the real-time market. One could narrow down the field of live Internet video streaming software to four market leaders, but comparing the features of the four would take a good chunk of a dedicated column to describe.

Audio takes up much less bandwidth for both encoding and broadcasting streams. If you're an ISP, you can do audio streaming at 28.8 Kbps per stream without much network impact. Video is a whole different story and trade-offs have to be made between video quality to be broadcast and network loading.

Most of the basic principles for production and distributing of streaming media apply equally to audio and video; video just sucks more bandwidth on the encoding, server, and end-user viewers.

If you can do live broadcasts with audio or video, it's a much easier process to create an "on-demand" file — similar to hitting the play button on a VCR to tape the ball game as you are watching it. On-demand files give you the luxury of editing and cleaning up a performance as well as the convenience to convert an audio or video tape to digital form on your own schedule. Live event Internet broadcasts have to correctly work the first time and have to continue to work *now*!

IN THE BEGINNING...

Internet broadcast — the ability to send audio and video through the Net — has, like many Netvances, been taking place in high-tech labs and universities since the mid '80s. At first, high-end UNIX worksta-

tions were used in conjunction with the academic Internet to broadcast audio and video events through an early multicast network called the M-Bone. A group of hackers at Cornell University (CU) brought PCs into the Net A/V world with the creation of the CU-SeeMe videoconferencing software. Due to constraints with data rates and computer hardware (Remember, this was the early '90s, so 1.5 Mbps T-1s on campus and first generation Power Mac were state-of-the-art. However, the early CU-SeeMe software was cranky and since everyone had 14.4 Kbps modems, viewers would be lucky to get crummy audio and one to two frames per second. It was cute to tinker with, but until modems got faster and the software was optimized to deal with lower bandwidths, it would remain a toy for academics.

Audio broadcast moved out of the primitive stages and into the real world with the first release of RealAudio software by Progressive Networks in late 1995, in combination with the heavy proliferation of 28.8 Kbps modems and multimedia machines with sound support. Progressive made RealAudio successful by focusing on streaming audio understandable. As data is constantly flowing from server to client, high quality audio is possible, even at 14.4 Kbps speeds. Progressive marketed the hell out of RealAudio so everyone would use the format.

LIVE AUDIO INTERNET BROADCAST — A PRODUCTION CHECKLIST

The road to Internet broadcast, especially live event/real-time broadcasts, is strewn with toe-popping mines. They will not kill you, but they can make you pretty miserable as you hop around on one foot trying to fix things as people behind you scream at you for doing something stupid.

Half the battle is in considering and planning for the overall production of the event, rather than just the hardware and software. A live-event audio (or video) broadcast can be broken down into five separate problems to be solved:

- The event itself
- Audio (video) capture and hand-off
- Encoding of audio (video) on computer
- Reliable, high-speed connectivity to distribution server
- Distribution server or servers for a large audience

Each piece has the potential to demonstrate Murphy's Law in action. While it may be impossible to defeat Murphy's Law over the long run, proper planning and forethought can minimize its appearance in the short term.

For the descriptions below, I've assumed that the event to be broadcast live is at a separate location from the distribution server; some people may argue that the server should be in the same location as the event, but for reasons which will become apparent shortly, I've placed the high-speed connectivity part before the distribution server.

THE EVENT ITSELF

If you're producing your own event, it's easy enough to figure out where you're going to put your equipment and where the T-1 comes into your "studio." However, if you're going out on location to broadcast a seminar or concert, many of the simple things in life you take for granted back at the office — such as space, power, and a high-speed Net connection — are no longer guaranteed. Access to the event site beforehand with time in advance to scope things out becomes a planning must.

Even if you are producing an event in the relative safety and stability of your own facilities, there are a couple of issues you need to think through. What time do you want to do your imitation of "Wayne's World?" During the day in your time zone has advantages, but if you want to reach an "at home" audience, evening hours might be more suitable, especially if you're on the East Coast and hoping to pick up Left Coast viewers who are one bag of granola and three hours behind.

Who owns performance copyrights? For a simple home-grown talk show, it might not be such a big deal, but innocently playing off-the-shelf CDs for intro or background music in a broadcast mode is bad, very bad. Unless you've got the appropriate licensing agreements, you've broken someone's intellectual property rights. Most music licenses are covered by two organizations, ASCAP (www.ascap.com) and BMI (www.bmi.com). A fuller discussion of music licensing issues is an exercise in a future column, since ASCAP and BMI both are still "experimenting" with license agreements.

AUDIO (VIDEO) CAPTURE AND HAND-OFF

Audio capture can be done with a simple microphone. More sophisticated set ups can include wireless microphones, sound compressors, and mixing boards. A basic mixing board and a couple of professional-grade microphones can cost between \$750 and \$1,000.

However, if someone else is handling the live event, you may not even need your own sound gear. Instead, a simple cable

running from an "output" jack on a public address (PA) system or mixing board to the "audio in" port on a multimedia PC (desktop, laptop, no difference) will do just fine.

If you're very lucky, you may not have to hoof your gear to the event site. Live audio can be taken directly from an analog PA system, fed into a device called a *hybrid telephone*, plucked off the phone line with a second hybrid telephone, then jacked into the PC. A hybrid telephone is a glorified box that can pipe audio directly down a phone line. More sophisticated and expensive (\$1,000 to \$1,200) devices have electronics to equalize and clean up audio across the analog lines.

On the other hand, it's possible to use analog audio from a standard phone line, into a mixing board (using ugly kludges such as a wireless microphone taped to the speaker of a phone), then sent by mashing a headset speaker into a telephone handset. Duct tape is always useful and preferable to make someone hold parts together. Audiophiles cringe at these scenarios and would prefer that the whole world use the purity of 56 Kbps digital ISDN to transmit sound, but some days you will have to use what is available.

I've had to mash a headset speaker into a telephone handset. It's not pretty, but it works.

Whatever the analog device or devices used, it should produce some sort of line-out audio which can be cabled straight into the "audio in" or "line in" port on a multimedia PC.

ENCODING OF AUDIO AND VIDEO ON PC

Once the audio flows into the PC, encoding is simple: Analog sound into a standard line-in/audio-in port on a multimedia PC, start the RealAudio 3.0 encoder for live broadcasts (which comes bundled with a RealAudio/Video license), select an encoding speed, and tell the encoder the Internet name of the machine to which the audio stream is to be sent.

Selecting an encoding speed is a no brainer. While RealAudio provides a number of options between 14.4 Kbps mono and 128 Kbps ISDN, most Net audio broadcasts are conducted around 28.8 Kbps mono, since 28.8 Kbps is the *de facto* modem pool for the largest number of households. Selecting 56 Kbps ISDN is only going to cause problems for anyone with a 56 Kbps analog modem, which may only do 53 Kbps on a good day. Remember, the mechanism of transport (ISDN, cable modem, 56 Kbps analog,



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pixie dust) is irrelevant, but the amount of data to be pumped through the connection is what matters. Certainly, higher encoding means higher quality sound, but is your audio capture equipment fully capable of delivering higher quality sound? Are the speakers on the listener's PC going to know the difference?

As for an actual machine type/speed, any off-the-shelf multimedia PC with 24 MB of RAM will do. I've seen any number of laptops and desktop machines encode live audio without a problem. I've used a Sharp laptop with a Pentium 133, 24 MB of RAM, and Windows 95 to encode RealAudio at 28.8 Kbps mono and color low bit-rate Enhanced CU-SeeMe video encoding. A PC Card slot device accepted composite video with no sweat in either application.

RELIABLE, HIGH-SPEED INTERNET CONNECTIVITY

Once encoded, the digitized audio (video) has to be transferred to the Internet distributed in real time (or as real as it gets). For encoded audio, anywhere from 56 Kbps to 128 Kbps is more than sufficient, so on a good day, a 56 Kbps analog modem would be sufficient for Internet connectivity to the appropriate ISP. Of course, higher speeds, such as those from an ISDN connection, will also do. A leased line for Internet audio broadcast is overkill, unless you are also supporting other applications down the same pipe or have a server sitting (literally) next to the encoding machine.

No more than a half a dozen hops should be between the encoding machine and the distribution server. Any delays between the two will only add lags and dropped packets which will appear as skips.

DISTRIBUTION SERVER OR SERVERS FOR A LARGE AUDIENCE

Finally, the single stream of digitized audio (video) must be multiplied into a bunch of streams for multiple listeners. Streaming servers and software may work in either unicast or multicast mode. In unicast UDP or TCP mode, such as those used by RealAudio/Video, the server takes the single stream and spits it back out to as many listeners as the software and server configuration can handle. Each listener is assigned one stream of information.

Multicast mode puts a single stream of information onto the network and allows many listeners to pick it up. Multicast's main promise is to conserve bandwidth. In theory, thousands of lis-

teners or viewers can enjoy a single stream of data. However, multicast software protocols are relatively new and require the appropriate software and "switches" turned on throughout the network in order to work. Further, multicast information cannot go across national access points (NAPs) or between Internet service providers without political and business agreements — agreements which have yet to be discussed at this point in time. While many people are experimenting with multicast, most Internet broadcasters assume worst case and plan for unicast-based streaming.

A RealAudio/Video server can be "built" out of any practical server type, either NT or UNIX. Progressive Networks has ported the RealAudio server to Solaris, Intel NT, Alpha NT, Sun OS, DEC UNIX, SGI IRIX, and Linux, among others. Any sort of streaming media server configuration should consider bandwidth and RAM. CPU power and hard disk space/speed rarely play a role because the server is just taking bits in and shoveling bits out.

A little math: Assume, for the sake of argument, each listener takes up 20 Kbps, the size of an FM mono audio stream. A hundred listeners will take 2 Mbps on a dedicated Ethernet segment and 250 users will practically soak an Ethernet segment at 5 Mbps.

It also means, for most practical purposes, any other application or server using that Ethernet segment will be clobbered at around 200 to 250 listeners of RealAudio, assuming you can afford the \$7,000 to \$8,000 which Progressive Networks wants you to fork over once you throw in the service contract.

To support 500 listeners in a true unicast mode, you need a technology to support either servers on multiple Ethernet servers or a Fast Ethernet (100 Mbps) locally at the ISP, plus the raw capacity of 10 Mbps. A thousand listeners equals 20 Mbps centrally dragged down to one location and 2,000 listeners brought to one location would require 40 Mbps, so you're close to a T-3 and out of the ballpark of practicality unless you are doing a lot of multicast on a single ISP's network or you are using a distributed network of distribution servers. Stay tuned, it's coming...

IT'S NOT WHO YOU KNOW, BUT HOW YOU ARE CONNECTED...

The distribution server should preferably be connected to the Internet through a "Tier 1" Internet service provider; i.e. one

that has a national high-speed backbone and peers with other Tier 1 providers at multiple national access points. Pumping quality streaming media from a distribution server to listeners requires as few obstacles as possible. Any interruption caused by a network delay or an overloaded NAP will result in loss of packets and, therefore, a degrading of service. Remember, streaming media is time-sensitive. Some dropped packets are not missed when downloading a web page. Look under the hood — does the ISP have packet loss? Are its backbone connections to a NAP overloaded? Are its backbone connections before it get to a NAP overloaded? Many young ISPs have the bad habit of overselling capacity far in excess of their connections to the rest of the world, selling 40 T-1s to customers while talking to a Tier 1 provider on a single T-1.

DISTRIBUTED NETWORK AND DISTRIBUTION SERVERS

For reasons of conserving bandwidth and avoiding a bottleneck (such as being swamped by someone else's customers listening to an event on your server), ISPs and Internet broadcasters that conduct popular events (anything with 200 listeners at the same time) either construct a distributed server network for streaming media or beg/borrow/pay for time on a distributed streaming media network.

A distributed streaming media network is typically composed of a group of servers (four or more) scattered across a national/international network. A central server distributes ("splits" in the Progressive Networks terminology) copies of the live stream to the distributed servers. Typically, people self-select the closest streaming media server on the basis of geography rather than network topology.

Buying and swapping time on these distributed networks promises to be an interesting sport over the next three years, especially since anyone with an Internet broadcast distribution network will probably charge for time used on the network to the originating party. The originating party will insist on paying for appearing viewers. Everyone will try to get their cut and it'll all likely be supported by advertising in the form of commercials. Some folks are making mutterings about pay-per-listen models, but it's a tough nut to crack. ♦

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BIG BOARD BRIEFS by Wallace Wang

COMPUSERVE AND AMERICA ONLINE EXPAND OVERSEAS

Seeing the success of Prodigy in tapping overseas markets, both CompuServe and America Online have ventured overseas in search of more suckers...er, members. America Online has teamed up with Mitsui and newspaper publisher Nihon Keizai Shimbun Inc. to launch its online service in Japan.

In the meantime, CompuServe is expanding into Mexico and Argentina. To provide service in Argentina, CompuServe Argentina has teamed up with Telintar — Argentina's only public provider of telephone service. So if you find yourself in Argentina one day, you'll be happy to know that only CompuServe can offer you 28.8 modem dial-up access, the highest speed currently available in that country. Service will initially be available in Buenos Aires with future plans to add service in at least 20 other cities across Argentina.

Despite its has-been status in America, CompuServe Mexico has grown at an annual rate of 163 percent and was recently awarded the Best New Data Carrier Award by *Communications Week International*. If CompuServe is the best service available in Mexico, you know the market is wide open for other ISPs in that country as well.

AT HOME NETWORK TO OFFER MICROSOFT NETWORK

The At Home (@Home) Network, a cable modem Internet access provider, has announced that the Microsoft Network will be available to subscribers for a flat fee of **\$6.95** a month. At Home claims that cable modem delivery can transmit data at speeds as much as 300 times faster than traditional dial-up modems, which means that using the Microsoft Network at those speeds might actually be bearable for a change.

AMERICA ONLINE'S NEW (OLD) PLANS FOR MAKING MONEY: TRICKING CUSTOMERS

With promises of unlimited access to their own content along with the Internet, America Online quickly increased its membership to 8 million. However, the **\$19.95** flat fee payment plan isn't profitable, so now America Online is trying two new approaches to making money.

Besides displaying more advertisements, America Online has launched a new feature called Worldplay Games. Unfortunately to enjoy these games, you have to pay **\$1.99** an hour. America Online plans to offer additional "premium services" in the future, which means charging customers **\$1.99** an hour as well.

Sound like the unlimited access offer you thought you signed up for when you joined America Online? Hardly. By offering pay-as-you-go services, America Online hopes to regain its former profits when members forget about the **\$1.99** hour surcharge and wander into services that they thought their original **\$19.95** monthly payments already covered.

PRODIGY OFFERS NEW INTERACTIVE GAMES

Prodigy has entered into an agreement with Infogrames Entertainment, Europe's largest producer and publisher of multiplayer games, to offer interactive multiplayer games through Prodigy Internet. Initially, Prodigy will offer three games this summer, and up to nine additional games in coming months (provided that they can get people interested).

The first game is called *Diagonal of Aces*, an action-and tactics-based game, that takes place in the fictional old west town of Slaughter Gulch, which features 100 inhabitants and 50 funeral directors (which is approximately the same ratio as certain parts of downtown Los Angeles). To stay in Slaughter Gulch, players must play a very strange card game where the goal is to achieve the greatest number of combinations of at least three identical cards.

The second game is *Crimson Wars*, a strategy and action game that takes place far in the future, more than two centuries after Terrans battled and drove back the Kesh-Ran, who were attempting to occupy Earth and the rest of the solar system. As in all good (and bad) science fiction, the evil aliens never really get wiped out, and now it's up to players to save the universe once again.

The third Infograme is tennis, which pits players against one another in heated matches. (Does this sound like playing the old video game "Pong" on your computer?)

MGM INTERACTIVE SELLS SHOW TO MICROSOFT NETWORK

MGM Interactive, the computer game unit of film studio Metro-Goldwyn-Mayer, has agreed to provide an Internet show "Paul Is Dead" for broadcast on the Microsoft Network online network. Although financial details were undisclosed, the deal is the first time a major Hollywood studio will produce shows specifically for the Internet.

The "rock-n-roll murder mystery" show will be launched on MSN later this year. The Microsoft Network hopes to lure couch potatoes away from their

Wallace Wang is the author of *CompuServe For Dummies*, *Visual Basic For Dummies*, *More Visual Basic For Dummies*, *Microsoft Office 97 For Dummies*, and *More Microsoft Office 97 For Dummies*.

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at 70334.3672

@compuserve.com, bothekat@aol.com, bo_the_cat@msn.com, or bothecat@prodigy.net

television sets and capture their attention in front of a personal computer (running Microsoft's operating system, of course) instead. If Microsoft's dream of turning the Internet into another medium for broadcasting mindless shows succeeds, perhaps we can expect to see an Internet version of the "Brady Bunch" on our computers sometime in the near future too.

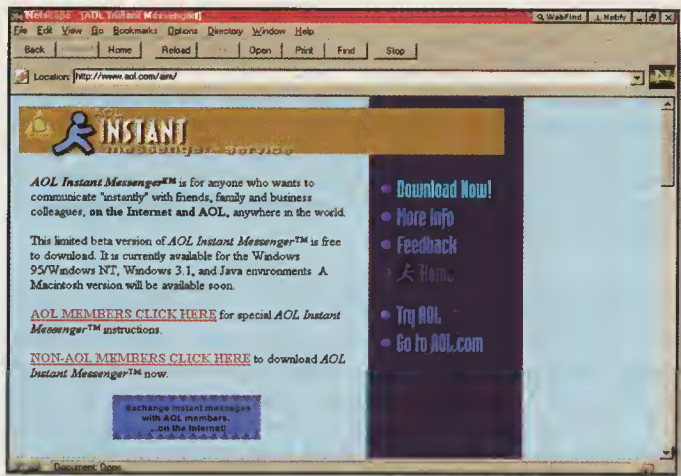
AOL LAUNCHES INSTANT INTERNET MESSAGES

America Online plans to offer its "instant messaging" software, previously available only to AOL users, to all Internet users, by downloading the software at its web site. The software, which is currently in beta, lets users send and respond to messages immediately, while a "Buddy List" feature tells users who among a designated list of users is online.

AOL said the software, which runs on the Internet backbone and not on AOLNet, AOL's proprietary network, can handle millions of simultaneous users, unlike AOLNet which can barely handle one user.

"This technology was designed to scale to millions and millions of users," said David Gang, senior vice president, product marketing, AOL Networks, adding that AOL has not yet decided whether it will charge for the final product in the future. "For the time being, this is the beta program. It could be free, we could charge for it, who knows," he said.

AOL said that users of any online service or any Internet access provider can use the software to communicate with friends who are also using the Instant Messenger software. To download a limited beta release from AOL's web site, visit www.aol.com. The limited beta release of Instant Messenger



is available only on Windows 95. Windows 3.1, Macintosh and Java versions will follow.

COMPUTERTOTS AND PRODIGY CONNECT CHILDREN TO THE INTERNET

The 1996 Entrepreneur of the Year recipients, Mary C. Rogers and Karen S. Marshall co-founders of Computertots, have named Prodigy Internet the program's official online service. Computertots classes reach more than 40,000 children each week at more than 3,000 locations in the United States. With this new deal, Computertot students will learn about the Internet by using Prodigy.

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"We are delighted to launch our new Internet.com curriculum using the Prodigy Internet to engage school-age children in powerful learning experiences," said Mary C. Rogers, CEO of Computertots. "Students must learn to use the computer as a tool to gain knowledge, communicate, and connect to the world in a positive and meaningful way. We are committed to facilitating this new literacy by linking our education resources to students and by extending opportunities for children to connect to the Internet at home."

The Computertots Internet curriculum is designed for students ages eight through adult. The classes will teach students how to explore the structure and language of the Internet, develop research skills while evaluating search engines and web sites, send and receive e-mail, and create their own web sites. Perhaps with kids learning about the benefits of the Internet at an early age, they'll be less inclined to become a member of America Online when they grow up.

AOL IN MARKETING PARTNERSHIP WITH CUC

America Online and CUC International Inc. have formed a marketing partnership to give CUC's shopping, travel and other online services prominent placement within the AOL network.

Under the three-year pact, AOL will receive payments totaling \$50 million, primarily to be credited against future transaction and membership commissions to AOL, and potential additional amounts based on a revenue-sharing agreement, the companies said in a statement.

In return, CUC will allow AOL's eight million members to buy goods and services at discounts through CUC's NetMarket Internet commerce site and through its Shoppers Advantage, Travelers Advantage, Auto Vantage and Privacy Guard clubs, the companies said.

CUC hopes to generate more than one million new interactive memberships per year because of the new marketing program, which will include online promotions, direct mail and telemarketing activities, they said.

"Our agreement with CUC demonstrates the enormous value of our member base to sophisticated marketing and consumer service providers," said Bob Pittman, chief executive officer of AOL Networks.

"The agreement furthers our drive to accelerate the growth of revenues from online advertising, e-commerce and transactions, which are key to AOL's business success," he said.

COMPUERVE POSTS FOURTH QUARTER LOSS

To no one's surprise but its clueless executives, CompuServe reported a **\$12.2 million** loss for the fourth quarter ending April 30. In the third quarter, CompuServe lost **\$14.2 million**.

However, CompuServe's earnings before interest, taxes, depreciation, amortization and non-cash special charges improved to **\$12.6 million** in the fourth quarter from **\$9.4 million** in the third quarter.

For the full fiscal year, CompuServe reported a loss of **\$119.8 million**, or **\$1.29** per share, on revenues of **\$842 million**. The loss included \$80.1 million of pretax charges relating to disposition of certain assets, the write-off of deferred subscriber acquisition costs, expenses for the write-off and withdrawal of WOW!, and the consolidation of facilities. CompuServe's earnings for the prior fiscal year were **\$49.1 million**, or **\$0.66** per share, on revenues of **\$793 million**.

Given the fact that CompuServe has no direction, no advertising, and no advantage over the Internet, does anyone seriously believe that CompuServe can last much longer without outside help? Perhaps the only hope for CompuServe is to convince an equally clueless company to buy them out.

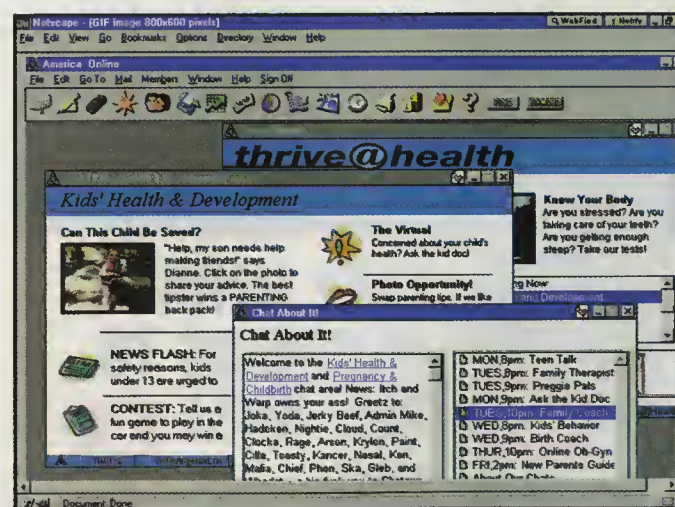
CONTINUING PROBLEMS AT AMERICA ONLINE

Having trouble with America Online lately? Even if you're lucky enough to access America Online, you may run into further problems with America Online delaying e-mail or just not being able to access anything beyond America Online's opening screen.

Despite the company's assurances that it's working on the problem, busy signals, lost e-mail, and unavailable services still plague America Online. If you haven't been hearing about these problems, it's likely because normal news services only report stories that are unusual, and not getting access to America Online is getting so routine that it's no longer worth mentioning any more.

You may have heard about hackers modifying web sites, but how about hackers breaking into America Online and modifying AOL content areas as well? Since early April, hackers have modified the following AOL content areas:

Stats Store
The New York Times
The Hub
GameWiz
AOL Glossary
the FTP sites of several AOL employees.



For information about past hacked AOL content areas, visit www.wco.com/~destiny/stathack.htm. To view a screenshot of the most recent AOL content hacks, visit www.wco.com/~destiny/kidhack.gif.

So how secure is America Online? Judging from the number of hacker attacks, America Online's security is either non-existent or as horribly managed as America Online's ability to allow members to enjoy unlimited access. ♦

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PUTTING THE NET TO WORK by Durant Imboden

THE MINING COMPANY, PART 2

Durant Imboden is a freelance writer whose credentials include published novels and nonfiction, fiction editing and staff writing for *Playboy*, travel writing for corporate clients, and representing authors at a New York literary agency. He currently manages the Writing Forum on The Microsoft Network and co-authors the "Flame Wars" column on Delphi, where he is an editorial consultant. Durant maintains a web site for writers at <http://www.writing.org>. MailTo: imboden@writing.org

In my July column, I interviewed Scott Kurnit, CEO of The Mining Company—a new web-based online service that ultimately will use some 4,000 independent subject specialists or “guides” to supply users with weekly editorial features and hand-picked Internet links on topics

that range from “Abuse and Incest Support” to “Zines.” This month, I’d like to wrap up my Mining Company coverage by interviewing Bill Day, chief operating officer at The Mining Company, and Ken Appleman, the company’s head technical guru.

IMBODEN: *You’ve set up a very slick and easy-to-use system with your active server pages, template “containers” for guide content, and so forth. What products are you using?*

DAY: We developed the ASPs with Microsoft Visual InterDev where appropriate, but most of the HTML was done by hand.

APPLEMAN: We picked Windows NT as our platform. We liked NT’s scalability and price performance, and the fact that it seemed to be a much easier administrative environment than UNIX. That was important to us, with hundreds or even thousands of sites to administer. We also liked NT’s international support, since we expect to have foreign-language sites later on.

IMBODEN: *Scott Kurnit told me that your servers are located in your offices, right there in the old New York Daily News Building. Do you foresee a time when you’ll need a huge web farm, and is that likely to be something you’ll outsource?*

APPLEMAN: It was important for us to do it ourselves during the shakedown phase. As the business grows larger, we’ll become more open to outside services—but first, hosting services must become more competitive. It’s important for hosting services to realize how easy it is for companies to do it themselves.

IMBODEN: *I understand that your guide system is set up as a database. How exactly does that work?*

DAY: We developed a dynamic system in-house, with active server pages on the front end and a conventional database application on the back end. We can make a site visible or invisible with a check mark. The system works very nicely, and we were pleased to see the kind of performance we could get running Intel boxes with SQL servers. One of the things we

want to do is make it even easier for users to navigate from one site to another. A visitor to the Venice site, for example, would be able to pull down artwork, peruse the taxonomy, and go directly to filmmaking. We’re about halfway there right now.

IMBODEN: *What about software for bulletin boards, chats, advertising, and tracking page views?*

APPLEMAN: We have agreements with ichat and Proxicom, but we’re actively talking to other prospective partners—not just to supply the best bulletin-board and chat experience, but also to deliver an audience to the rooms. For our banner ads, we’re using NetGravity with some custom work to make it easier to administer across hundreds or thousands of sites. For tracking page views, we put the log files into a SQL server database and work from that. This is an area where we’d be happy to look at other solutions.

IMBODEN: *As a writer who does web pages, I’m impressed by your production system—the way you take a generic HTML file and turn it into a nice-looking active server page automatically. Can you describe how that works?*

APPLEMAN: One of the goals we had initially was to let guides use their choice of production tools on just about any platform. What we’ve implemented is a system that lets them upload files with standard Net-based tools like FTP. Once a file gets to us, it’s processed into our format by a tool that looks for key components. The tool then makes the changes that are needed for the content to emerge as a Mining Company page. We call this process “chewing.”

DAY: We developed it all ourselves, starting in July of 1996. Our ten-person staff has been pretty focused on doing solid work quickly and then enhancing.

APPLEMAN: Another thing we developed was “direct links code.” Our persistent frame was important to use, but we were afraid search engines would link to the content and not show the frames. So we developed code that’s a combination of JavaScript and ASP code. It ensures that, when you link to a complete page or even a piece of our content, our frame shows up. This also lets guides link to the welcome page of another Mining Company site without having to worry about the URL target. It was a challenge to get the code to work correctly over a variety of frames-capable browsers.

IMBODEN: *Are there any other categories of software or services that you’d be interested in hearing about from third-party developers?*



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APPLEMAN: Tracking. Processing web stats is of high interest. Another area is object-oriented dynamic web page-generated software.

DAY: We'd like to make our pages even more dynamic—to make them reflect the user's preferences and interests. Most people have four or five things in life that really interest them, and our ideal is to link the consumer to the guides in each of those areas through a personalized online experience.

IMBODEN: *This is going to make me sound like a shill, but what were your goals in attending this year's One ISPCon?*

DAY: The ISP market is in a state of flux right now. We're talking and partnering with some of the big guys, but we're also

interested in working with the traditional BBS operator turned ISP. Most of them don't have much traffic, so there's probably more opportunity for them to partner with us as guides—in other words, to leverage their ISP businesses and drive traffic to their Mining Company sites. But we do think the roles of a small ISP and a Mining Company guide can be complementary, and that's something we hope to talk about with ISPs in the months ahead. ♦

FOLLOW-UP REPORT: NETOBJECTS FUSION 2.0



Last month, I reviewed NetObjects Fusion 2.0, the high-end authoring tool that takes the HTML coding and editing out of web design. I had a few minor gripes with the program, but those complaints didn't stop me from writing:

"Just as desktop-publishing applications like Quark XPress put traditional typesetters and keyliners out of work, NetObject Fusion 2.0 and its successors will force HTML coders to learn Java, JavaScript, or other marketable skills. In a year or two, the idea of coding a web site in Notepad or even HotDog Pro may seem as quaint as laying out a magazine with an X-Acto knife and hot wax. NetObjects Fusion 2.0 is nothing less than an industry milestone: a Ventura Publisher or FrameMaker for the Web."

I liked NetObjects Fusion when I reviewed it, and I'm still happy with the program. For one thing, it let me single-handedly build 63 highly formatted pages for The Microsoft Network's Writing Forum in a matter of days—a task that would have been next to impossible with an HTML editor or a less capable WYSIWYG authoring tool. Still, I've found a few more things to gripe about in the last few weeks, and here they are:

NETOBJECTS FUSION HAS AN INFLEXIBLE DIRECTORY STRUCTURE

With commendable logic, the designers of NetObjects Fusion decided that all .htm or .html files except the main (home) page should be placed in an "HTML" directory. Trouble is, some ISPs and corporate web masters dictate

that HTML files be placed in the root directory. And even if they don't, other considerations (such as the use of hardcoded navbars authored in third-party tools like Macromedia Flash) may require that HTML and other files be placed in certain locations. NetObjects doesn't regard this as a problem; the official corporate line (as stated on the company's support newsgroup) is that the ISP market is very competitive, and users can switch providers if their ISPs aren't accommodating. That's more easily said than done. If I'm designing corporate web pages, my "ISP" may be the company I'm working for—and it's unlikely that the web master will change his directory structure for my convenience. The same applies if I'm a freelancer building a site for a client.

There is a workaround, of course: I can go through the HTML files that NetObjects Fusion generates at publishing time, changing directory references via the search-and-replace command in a text editor. But this is a great nuisance, especially since NetObjects Fusion generates a new HTML file every time a page is changed. And it's all the more galling when NetObjects could easily have included user-configurable directories in the "preferences" dialogue for each site.

NETOBJECTS FUSION CHOKES ON LINKS ENDING IN "/"

This *is* a minor bug, but it's very annoying when you've just imported a series of pages with 200 web links.

What happens is this:

- You publish a page with a link like "http://www.writing.org/," and the link shows up as ordinary text.
- You then go back into NetObjects Fusion and highlight the site name so you can check or repair the link.

Result: Your PC locks up tight, forcing a cold reboot.

The workaround is simply to delete the site name, then retype it before highlighting it and clicking the "Link" button. I'm sure I'll find other glitches as I continue to work with NetObjects Fusion, but these two are annoying enough. Mind you, I still think it's a great program—and it should be even better when NetObjects finally has the sense to realize that the customer, not the authoring program, should dictate a web site's directory structure. ♦

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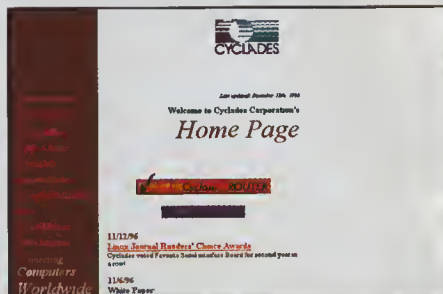
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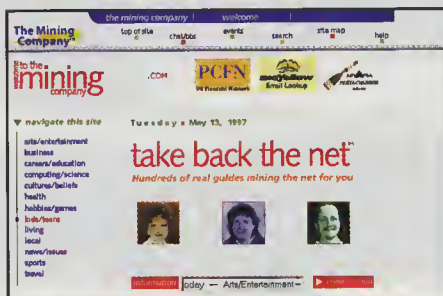
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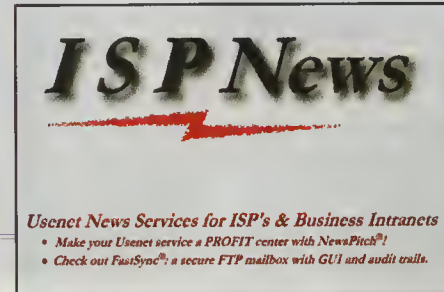
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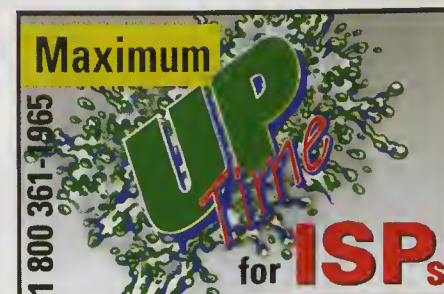


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DVORAK ONLINE

by John C. Dvorak

SEARCH ENGINE BREAKDOWNS

Two things happened. First, I ran into an obscure company name while researching the Burroughs Corporation: Charles R. Hadley. Then, I saw a review of the search engines in *Computer Life* that ranked Hotbot (www.hotbot.com) and Infoseek (www.infoseek.com) as the two best with AltaVista (www.altavista.com) third! This didn't match my experience in the past or currently. Using these things daily, I still find AltaVista to be the best engine although I use Hotbot the second most. I've never used Infoseek. So I put the major engines to the test to have them look up Charles R. Hadley.

I ran into the Charles R. Hadley company in the Charles Babbage Institute archives regarding Burroughs. I found little about the company or why Burroughs bought them around 1958. The only references I tracked down on Hadley were the Babbage archives and an elementary school in Florida named after Hadley. So, how would these search engines do?

Let's start with Hotbot, which was highly praised by *Computer Life*. When Charles R. Hadley was typed directly into Hotbot, it came up empty. I found this peculiar. When quotes were used around Charles R. Hadley, Hotbot turned up 39 citations, including an obscure find of a personal page of an individual who went to the Charles R. Hadley Elementary School and who put this fact in her bio. (This was the only engine to come up with this obscure, albeit useless, reference.) But Hotbot continually cited other Hadleys and gave them high ratings. In fact, the first Hadley listed with a 99 percent confidence rating was Charles D. Hadley. Second was the Charles R. Hadley Elementary School with 95 percent. It got it right again by listing the Burroughs archives, but the confidence rating was down again. Exactly why hitting Charles R. Hadley perfectly gave lower ratings than Charles D. Hadley indicates a flaw someplace.

Once the confidence got below 90 percent the engine was useless. There were no Charles R. Hadleys or even Charles Hadleys. In one case, there wasn't anything at all and that link rated an 86 percent confidence level. For what? The ultra low confidence hits at the end of the list, which appeared to have nothing to do with anything, came up as dead or timed-out links. The desired links were found though, although none were in the top five highest rated hits.

With Infoseek, Charles R. Hadley with or without quotes came up with six hits total with only one real

hit, the elementary school reference. From there it dropped to 61 percent and the reference was to a Charles on one line and an Hadley on another — no relation. There was virtually nothing found by this engine. And the low confidence hits didn't even have the name Hadley on the page. This site was the only one of two engines (the other being Hotbot) given five stars by *Computer Life*. It mystifies me.

AltaVista, with Charles R. Hadley in quotes, gave me two Burroughs references (at rank one and two) and the elementary school as the third hit. No others. This was a close to perfect as I got all day. I was looking for the Burroughs pages and got them without tossing in anything weird. When plain Charles R. Hadley was dropped in without quotes, a whopping 26,000 hits came back, a typical AltaVista overkill. It was every instance of a Charles and a Hadley. Curiously, one of the "real" sites came in at number one. Clearly I could do no better than this.

Webcrawler could find no references to Charles R. Hadley when in quotes, and 163,000 out of quotes none higher than 65 percent confidence. It flunked out.

Excite could find no references with Hadley in quotes either. Curiously, out of quotations it hit Charles R. Hadley exactly but gave it only a 72 percent confidence rating to this exact hit (the elementary school) and higher ratings to inexact hits. The desired Burroughs archives file was listed at 70 percent, even though it was an exact hit. It was the tenth hit and the last. Clicking on the Excite "More Like This" button blew open the Burroughs archives at the Babbage Institute revealing nine more pages. While the missteps of Excite are seriously annoying with low ratings for exact hits and no hits when a name is in quotes, the "More Like This" feature works perfectly. Of course, you have to ask yourself why these hidden pages didn't crop up in the original search.

Lycos blew off the quote marks and did a search of Hadley and Charles and "R." At 100 percent confidence, the number one hit only found (according to its own comment) two of the three "terms." How two out of three garners 100 percent confidence is beyond me. Worse, it was a dead link! Sheesh. Sorry, another flunk.

I tried various tricks to get the engine to produce some meaningful results and finally cheated by typing in "Hadley" and "Burroughs." Bingo number one and two. And within those pages was clearly the name "Charles R. Hadley." So, the engine had indeed indexed these pages and had them in its database, but

In addition to his weekly syndicated radio call-in show, *Software/Hardtalk*, syndicated newspaper columns, magazine writing for *MacUser*, *PC Computing*, *DEC Professional*, *Information Technology*, and his featured "Inside Track" column in *PC Magazine*, Dvorak is the author of several best-selling books, including *Dvorak's Inside Track to DOS & PC Performance*, *Dvorak's Guide to PC Telecommunications*, and *Dvorak's Inside Track to the Mac*. John can be reached at dvorak@aol.com

have hashed things in such a way that a normal search won't uncover the desired pages. This isn't good at all.

Out of curiosity, I checked out a few other engines including What-U-Seek and Go2 (formerly the World Wide Web Worm) and got nothing at all. And when I say nothing I mean nothing. What-U-Seek came up with a message saying it was revamping the database and Go2 merely claimed it would be the best search engine in 1997. Any searches done on these sites looks to be a waste of time. I then went to Magellan, which I thought was going to be a contender a year ago. It found nothing and suggested going to Excite to do a search! It seems to have given up trying to keep up with the pack.

Final analysis: AltaVista first. Hotbot and Excite tied for second. Infoseek a ragged fourth. Lycos, Webcrawler, Go2, What-U-Seek and Magellan are completely out of the running. ♦

French's Zesty Beef Marinade

One of the problems everyday household cooks have is getting into a rut. You start to develop a few good recipes and pretty soon that's all you're cooking. As good as your best meal might be, it can get old fast to a family having it day after day. You should put at least one day aside, maybe more, to develop new ideas or to use recipes that are really weird or offbeat. I try to find recipes that use ingredients I would never think of using.

That's the ticket with this odd marinade I discovered on the back of a little folder that was distributed with French's yellow mustard a couple of months ago. I take these little recipe booklets seriously because the companies are serious about selling more products, and many of these recipes are tested thoroughly with this goal in mind. I will admit that many of these free recipes sound gosh awful, and this one seemed a bit strange. But it turned out to be fantastic.

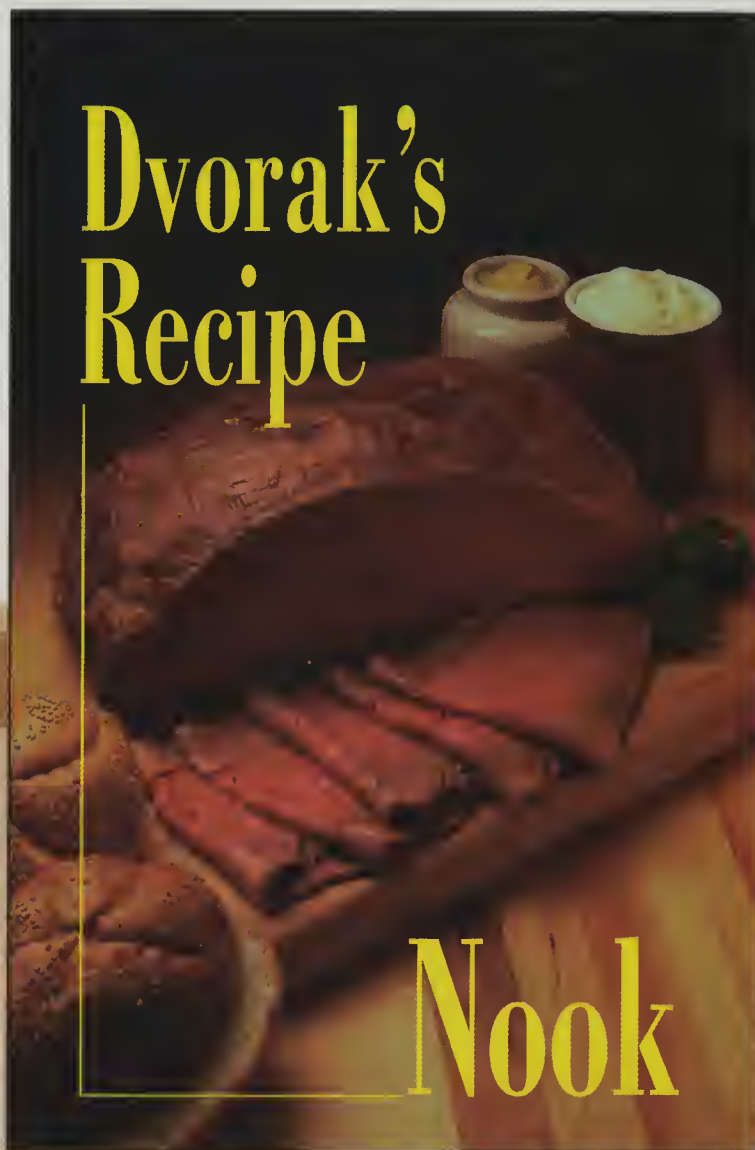
We eat such a small variety of meats in the United States that any one of them quickly becomes tiresome if something different isn't done, and done often. So I was happy to find this offbeat marinade which I have used successfully on a variety of cuts, filet mignon being the most effective.


Filet mignon is usually the tenderest, but least delicious, cut of beef found today. It's quite bland when compared to the flank, for example. In France, where you get steak frites, they seldom serve the meat unless it has been marinated in something or another. Then they top it with something to add even more flavor. If you go around France eating steak frites here and there, you find a variety of styles. Americans rarely marinate anything, let alone filet mignon. Our meals would be a lot more interesting if we routinely marinated our beef. Many of the great steakhouses are known for doing little more than rubbing a piece of garlic on the meat and grilling it. This has created some sort of bogus standard for excellence. Fact is, those places get better meat than we can get at the supermarket. We need to marinate.

FRENCH'S ZESTY BEEF MARINADE

- 1/4 cup French's Yellow Mustard
- 1/4 cup Worcestershire Sauce
- 1/4 cup olive oil
- 1 1/2 teaspoons oregano (use powder if you can find it)
- 1 tablespoon seasoned salt (celery salt is what I use)

Mix ingredients thoroughly. Coat the meat and turn over as needed. This stuff makes your hands smell edible. It's great. I usually marinate for two or more hours. If you're going to grill or fry your steaks, gently wash off the marinade (leaving a slight yellowy residue) and cook as fast as you can at high temperatures to get a nice crusty exterior. Nobody will ever figure out what you did to impart such a beautiful flavor to your meat. Very unusual. ♦





**SETTING UP AN
INTERNET PRESENCE
SHOULDN'T FRAY
YOUR NERVES**

THERE ARE ENOUGH COMPLEXITIES IN LIFE. CONNECTING TO THE INTERNET SHOULDN'T BE ONE OF THEM.

Creating an Internet presence can be a frustrating experience, even for the expert. Beyond the web server there are routers to make the connections, FTP to move the files, and e-mail servers to give your mail a home. And don't forget the Domain Name Server that's required so the world can know your name. Even after you gather all the pieces, you still have to integrate them. And the costs, in time and money, can be staggering. But now there is an easier way.

THE INTERNET PRESENCE IN A BOX

The Internet Protocol Adapter (IPAD) is the only product that fully integrates a router, terminal server, and core Internet services (e-mail, DNS, unlimited WWW and FTP servers) into a single device. With all the necessary internal and external connections, Domain Name Service, and other required functions, the IPAD includes everything you need to easily establish a complete Internet presence. In fact, it's so complete, you can add remote access by simply plugging in modems and dialing in with any Internet compatible computer.

BUILT WITH PERFORMANCE AND DURABILITY IN MIND

The IPAD's capability is housed in a rack-mount chassis of battle-ready construction. Its custom software, optimized for the Pentium processor, yields an unprecedented combination of performance and durability that you can never get from a general purpose operating system. The IPAD may be easy to use, but it's no toy.

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	\$7465	\$3500
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Configuration Time	Pre-configured	1-3 hrs
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Configuration Time	Pre-configured	5-30 hrs
Configuration Cost	—	\$615 Avg
Sub Total	—	\$1510
Web Server	Included	Included
Configuration Time	Pre-configured	3-25 hrs
Configuration Cost	—	\$490 Avg
Sub Total	—	\$490
FTP Server	Included	Included
Configuration Time	Pre-configured	1-2 hrs
Configuration Cost	—	\$50 Avg
Sub Total	—	\$50
DNS Server	Included	\$495
Configuration Time	Pre-configured	5-80 hrs
Configuration Cost	—	\$1600 Avg
Sub Total	—	\$2095
E-Mail Server	Included	\$580
Configuration Time	Pre-configured	10-100 hrs
Configuration Cost	—	\$1900 Avg
Sub Total	—	\$2480
Support Costs Per Year	\$795	\$2100
	Includes Hardware and Software Protection	No Hardware or Software Protection
Number of Vendors	1	5
Total Cost	\$8260	\$13,600
Time from receipt to fully operational site	2 Days	120 Days

PLUG 'N PLAY AND WALK AWAY

Many products claim to be easy to use, but the proof is in the time you spend getting it up and running. With other products you have to *learn everything* before you can *do anything*, and with the Internet there's a lot to learn. Only the IPAD allows you to get started immediately, and learn as you go. Information Week said of the IPAD "*from box to working system in two hours even with mistakes.*"

And this ease of use doesn't stop there. With an IPAD even those without formal Internet training can confidently grow and maintain their own network.

GO WITH A WINNER!

InfoWorld Magazine said "*The IPAD represents an elegant solution when you need to easily build an Internet or intranet presence. Considering the time it saves you, the price represents a good value.*" In 1995 John C. Dvorak gave the IPAD his PC Telecommunications Excellence Award because he recognized the IPAD advantage.

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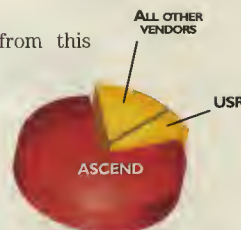


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